

FLIGHT

The
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AND AIRSHIPS

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EDITORIAL COMMENT



EVERYONE is naturally glad to welcome R 100 home again after her flight to Montreal and back. It is an occasion for natural jubilation, and no one will grudge it. At the same time it is a fit and proper time to examine the facts and see what lessons can safely be drawn from the flight. All incidents on any airship flight now should be examined and should be divided into three categories, (1) those which are purely incidental, (2) those which are peculiar to the particular design of the **Home Again** airship concerned, and (3) those which are of common import to all airships. The fact that R 100 is using petrol engines, for example, and that petrol engines are not the most suitable for airships, is incidental. The engines of R 100 can be changed so soon as other more suitable engines are available. The continued use of gold-beater's skin for gasbags is also incidental. We cannot believe that our scientists will not in time produce a material which is equally suitable and much less expensive. Fabric, however, is a somewhat different matter. If airships are to succeed as commercial vehicles or as naval scouts, they must have a reliable outer cover. The present position is not satisfactory, and the Director of Airship Development frankly admits that improvement is needed. The covering on fins seems to give particular trouble. This trouble was experienced by the *Graf Zeppelin* on her first voyage across the Atlantic, and R 100 on her outward trip had trouble with three fins. In addition a most unpleasant amount of water got inside the hull on the return trip. It did not do any great damage, but it caused the passengers and crew some inconvenience by putting the electric cooker out of action. Modern passengers will not tolerate any avoidable inconvenience. Still, there is no reason to think that the fabric problem is insoluble, and we look forward to its solution. Against this trouble can be set the success, so far, of the drawing in of the fabric between the main longitudinal by means of tapes and wires. This feature

DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list—

- 1930
Aug. 9-24 **Gliding Competitions, Rhön, Germany.**
Aug. 15-31 **Circuit of Italy.**
Aug. 30 .. **Liverpool-Manchester Inter-City Air Race.**
Aug. 30 .. **Liverpool Air Display.**
Aug. 30 .. **Air Fete, Cramlington, Newcastle-on-Tyne.**
Aug. 30 .. **Bedford Club Meeting.**
Sept. 1-6 .. **5th International Air Congress at The Hague.**
Sept. 6 .. **Opening of Ratcliffe Aerodrome, Leicester.**
Sept. 6 .. **Bristol and Wessex Ae.C. Air Display and Garden Party.**
Sept. 13 .. **N.F.S. Air Pageant, Tollerton, Nottingham.**
Sept. 14 .. **N.F.S. Air Pageant, Leeds.**
Sept. 15-20 **Flying Week at Llandudno.**
Sept. 27 .. **N.F.S. Air Meeting, Hanworth.**
Nov. 28- **Paris Aero Show.**
Dec. 14
1932
May 31 .. **Closing date for Cellon Cross-Channel Glide £1,000 Prize.**

more than any other caused those who follow airship development to question the stoutness of R 100. This fabric on the hull withstood the severe test of vertical currents of air in a thunderstorm, and so far the system has proved successful.

R 100 has suffered two failures in her metal work, namely, the tail fairing and the spider which supported two petrol tanks. It was a great mercy that this latter collapse did not occur until just after the airship had been made fast to her home tower. We do not yet know whether the collapse was due to strains caused during the adventure in the thunderstorm over the St. Lawrence, and, as Major Scott definitely said that the movements while the airship was subject to rising and descending currents of air were not violent, there may be no connection between the storm and the collapse of the spider.

These items which we have enumerated all concern the special design of R 100, though we understand that the method of pre-doping the fabric is considered unsatisfactory on R 101 as well. None of the other points concern airships in general. Not one of them seems to be beyond remedy, though they may suggest careful inspection before R 100 sets forth again on a long trip; and we have no doubt that the inspection will, in fact, be very thorough.

On the other hand, all those who have flown in R 100 unite in praising the steadiness of the airship, and in confirming the reports of earlier passengers that travel by airship is the most comfortable form of travel in the world. We must add that our airship officers and men, though not so experienced as are German airship crews, have shown themselves conspicuously efficient in circumstances which called for high qualities of airmanship.

The voyage of R 100 to Canada and back has naturally thrown no new light on the prospects of the commercial success of an airship service. It was not expected that it would do so. The first necessity was to prove the technical success of airships, and of British design. In that respect the trip has proved very encouraging. The least we can say is that it has justified the Government in undertaking the great experiment of developing airships, and we welcome the striking words of the Air Minister to the Director of Airship Development, that he might "look forward with quiet confidence to the successful completion of the great experiment" with which he had been charged.

The Air Exercises in 1927 and 1928 were called "exercises" because they exercised the organisation, the staff, and the units concerned with the defence of London. So far as the ground organisation and the

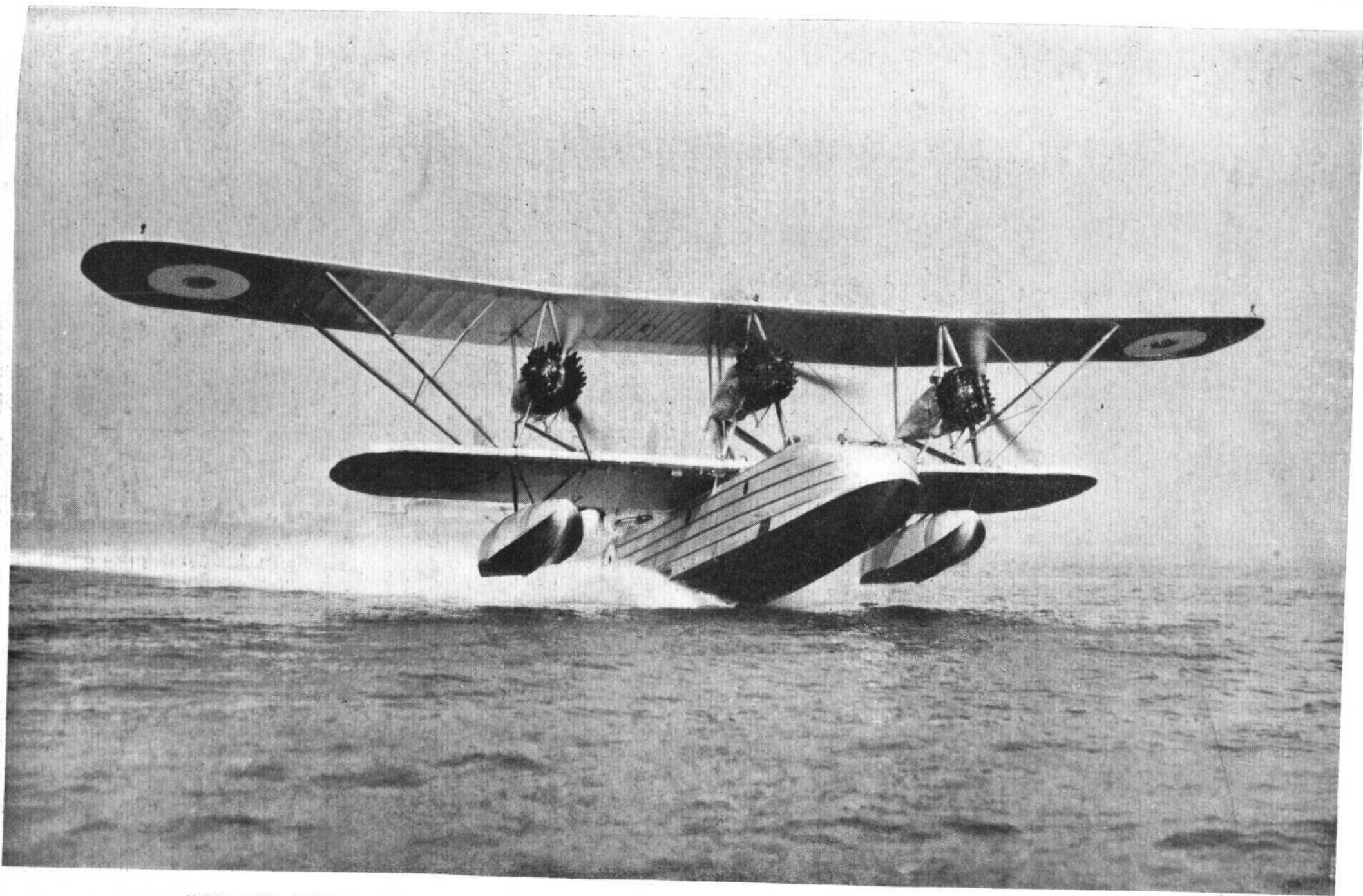
The Manœuvres Fighting Area are concerned, the defence of London is regarded in its main features as a cut-and-dried plan of campaign, though naturally details must be liable to modification. One of the objects of those exercises was to discover such details.

The recent sham campaign in the air was less exercises than manœuvres, on the lines of Army manœuvres. The general plan may never be reproduced in actual war, though the possibility of a similar situation may be imagined. It should, however, have served the purpose of helping the public to see the possibility of a campaign in which land forces are not engaged to any appreciable extent. The lesson of that possibility needs to be taught and re-taught, as it is the chief reason for maintaining a separate Air Ministry, Air Force, Air Staff and Air Staff College. In these manœuvres the two Air Officers Commanding, Air Vice Marshals Dowding and Sir John Steel, were given each a fairly free hand to outwit each other. It is most satisfactory to note that each displayed originality as well as initiative. Such qualities in our air commanders may make all the difference in a future war; but hitherto the episode of the Independent Air Force in 1918 has been almost the only case in which an air officer has had an opportunity of displaying such qualities in the face of a civilised opponent.

Somewhat curiously, each commander scored by making an unorthodox use of a certain class of aeroplane. Fighters were used for bombing and night-bombers were used for day bombing. This novel use of fighters and night-bombers came as a surprise, almost as a shock. It raises the question whether either of the types employed was the best possible for the purpose. Long-range day-bombers would surely have some qualities different from those of the Virginias and Hyderabad. Ideal ground-straafers would probably resemble the Hart rather than the Bulldog. Our Army squadrons may well have need of such classes of machines, and Air Defences may also require a class of specialised machines for long-range bombing by day. Therefore, we shall not be surprised if these new classes are called for as a result of these manœuvres.



The Blackburn "Sydney." The largest military monoplane flying-boat. She has three Rolls-Royce F. XII M.S. engines, and has been designed for reconnaissance and coastal patrol work, carrying a normal crew of five—pilot, pilot-navigator, wireless operator, engineer and gunner.



"ON HER STEP": The Supermarine-Jaguar "Southampton" Mark X getting away. Note the clean running.

9271



THE "HENDY" 302

A Low-Wing Cabin Monoplane with Cirrus-Hermes Engine

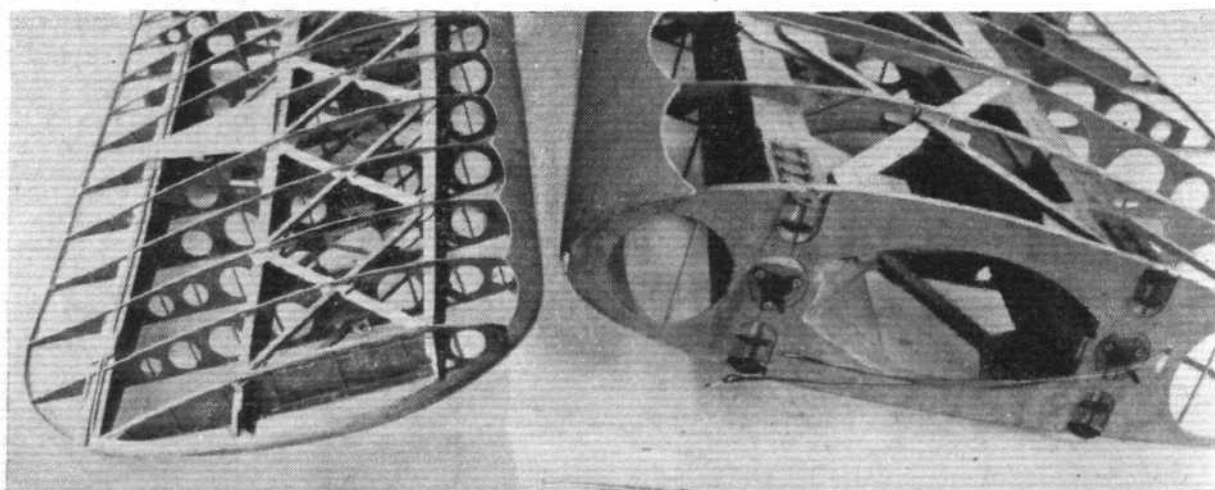
FROM whatever point of view one regards it, the "Hendy" 302 monoplane, produced for the King's Cup Air Race, is a machine of more than usual interest. Aerodynamically, it is characterised by high efficiency, both in the matter of minimum drag and high L/D and high k_1 max. Structurally, it is simple, robust and rigid, at the cost, perhaps, of a slightly increased structure weight. And as a practical aeroplane for the private owner it is comfortable, roomy and well-behaved. In fact, put quite briefly, there is very little in the "Hendy" 302 that one could reasonably wish to have altered.

Before giving a description of the actual machine, a few notes dealing with the people who produced it may be of assistance to those of our readers to whom the Henderson Aircraft Company is something of an unknown quantity. Mr. Basil B. Henderson was, for several years, on the Avro technical staff at Hamble. When that firm decided to close down the Hamble works, Mr. Henderson resigned his position and formed, with Mr. H. A. Miles (who is not to be confused with Mr. F. G. Miles of the Southern Aircraft Co.),

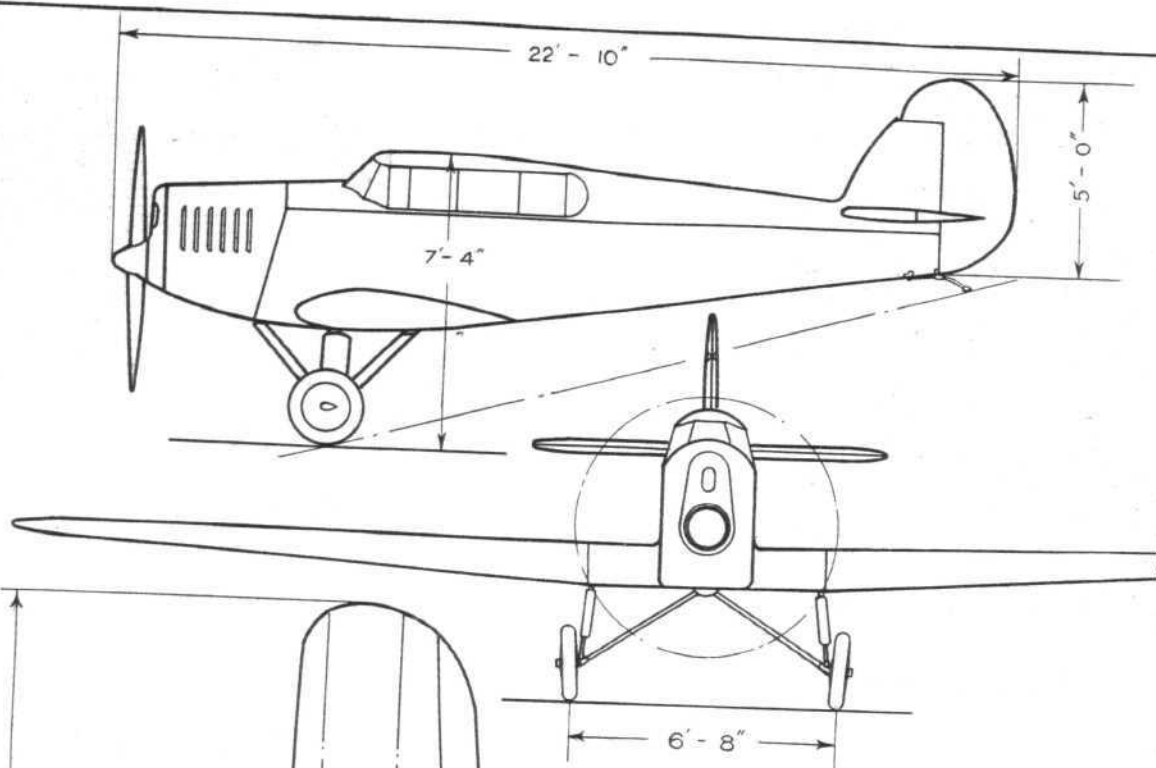
"HENDY" 302				
Cirrus "Hermes" Engine				
Length, o.a.	..	..	ft. in.	metres
Wing Span	..	..	35 00	10.67
Areas			sq. ft.	sq. m.
Wing	..	..	163.0	15.15
Ailerons	..	..	15.0	1.39
Tailplane	..	..	15.3	1.42
Elevator	..	..	10.2	0.95
Fin	..	..	4.0	0.36
Rudder	..	..	8.0	0.74
Weights			lb.	kg.
Tare	..	..	1,045	475
Gross*	..	..	1,700	773
Performance				
Max. Speed near ground	..	..	132 m.p.h. (213 km./h.)	
Cruising Speed (at 1,900 r.p.m.)	..	..	112 m.p.h. (180 km./h.)	
Minimum Speed	..	..	37 m.p.h. (60 km./h.)	
Initial Rate of Climb	..	..	850 ft./min. (4.32 m./sec.)	
Time to 5,000 ft. (1,525 m.)	..	..	7.1 minute	
Service Ceiling	..	..	16,000 ft. (4,880 m.)	
* This is the C. of A. gross weight granted for the King's Cup Race. The designed C. of A. weight is 1,600 lb. (726 kg.) for Aerobatics and 1,900 lb. (862 kg.) for Normal.				

the Henderson Aircraft Co. A small shed was obtained at the Shoreham aerodrome, and in this, Henderson and Miles set to work. Mr. Henderson had for some time been pondering an idea for a new type of wing spar construction, and now was the opportunity to test out the idea on an actual machine. Funds were not too plentiful, and something unambitious was indicated. Mr. Henderson chose the type of machine which could be built at the smallest cost, while yet definitely proving the soundness or otherwise of Mr. Henderson's idea for a new spar. That machine was the little "Hobo," a single-seater low-wing monoplane with A.B.C. "Scorpion" engine. After many vicissitudes, the machine was completed and flown, and not only did it prove quite successful as a single-seater machine, but it showed that the new type of wing spar did in practice what Mr.

Henderson had calculated that it should do. The spar was very rigid, and not only gave very little deflection under bending loads but, what was more important still, proved, as had been hoped, that the Henderson form of construction gave a wing very strong in torsion.

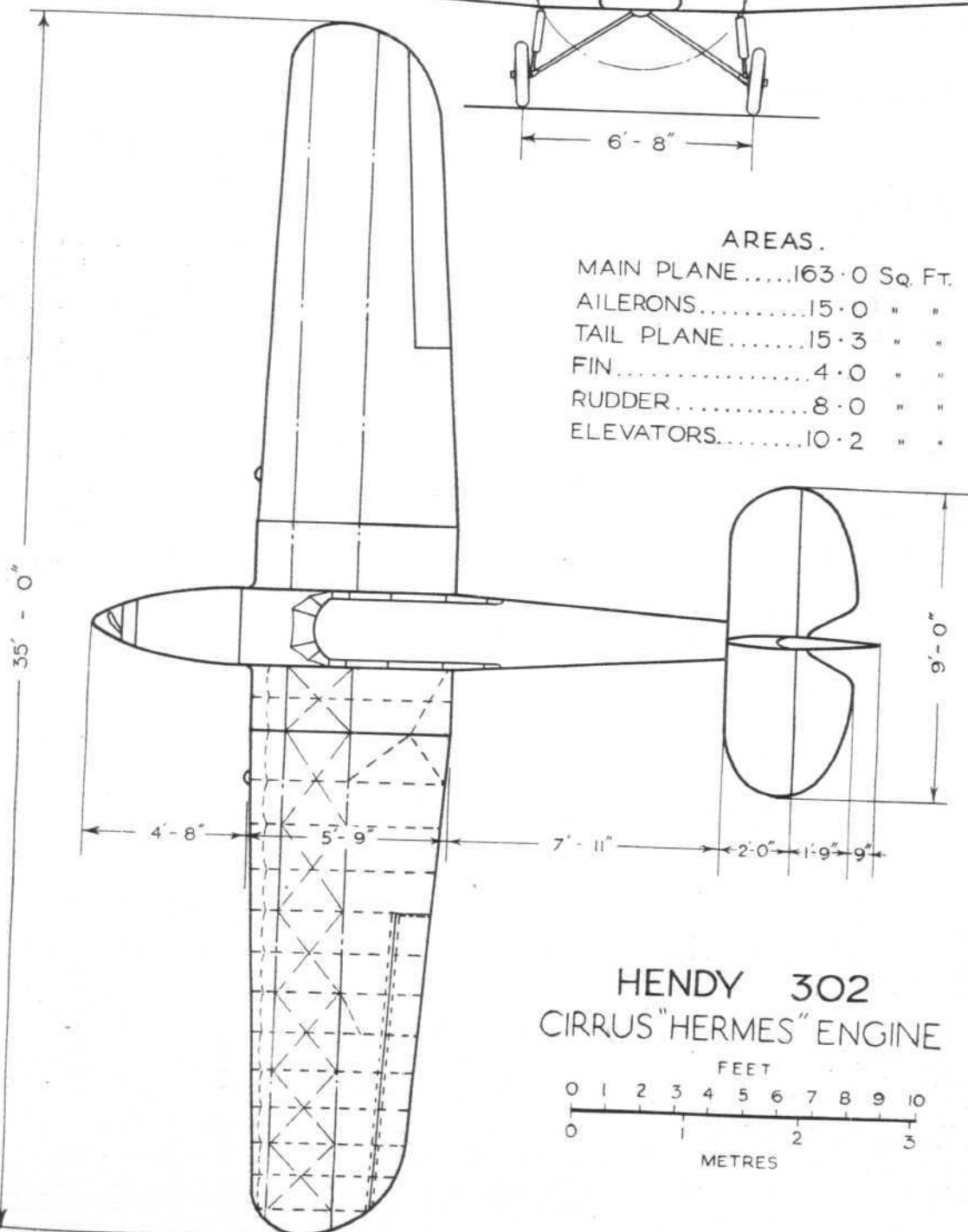


THE "HENDY" 302: Details of the wing construction. Note the lattice type drag bracing of the main spars. (FLIGHT Photos.)

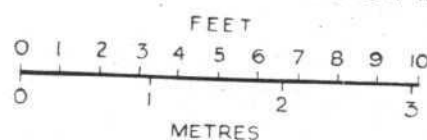


AREAS.

MAIN PLANE	.....	163.0	Sq. Ft.
AILERONS	.....	15.0	" "
TAIL PLANE	.....	15.3	" "
FIN	.....	4.0	" "
RUDDER	.....	8.0	" "
ELEVATORS	.....	10.2	" "



HENDY 302
CIRRUS "HERMES" ENGINE

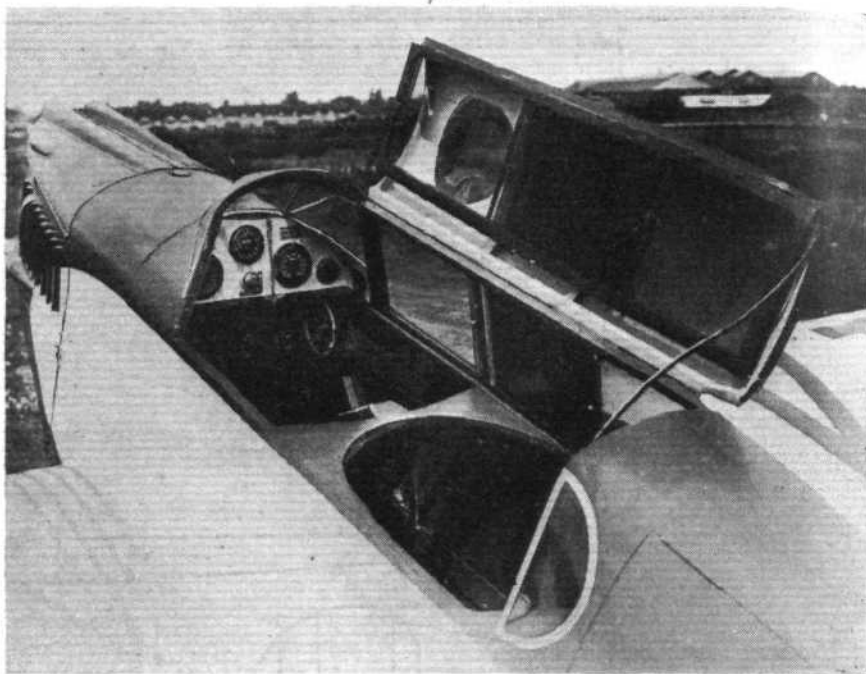


THE "HENDY" 302: General Arrangement Drawings.

"FLIGHT"

THE CABIN OF THE "HENDY" 302 : This is very comfortable, with plenty of leg and elbow room. The view is good, much better than one would expect from the external appearance. (FLIGHT Photo.)

The "Hobo" was built in 1929. Mr. Henderson's programme included testing out the new spar on larger machines, either in wood or, if possible, in metal, the principle of the spar design lending itself very well to all-metal construction. In the meantime, Capt. E. W. Percival was interested in machines suitable for private owners, and was keen on getting a machine to fly in the King's Cup Air Race. The next step in Mr. Henderson's programme was a two-seater development of the little "Hobo," and the general "scheme" appealed to Capt. Percival. The upshot was that he decided to join forces with Henderson and Miles, they to do the actual design work, calculations, etc., and Percival to contribute practical advice out of his long and varied experience of aircraft at home and in Australia. A contract was entered into with George Parnall of Bristol for the construction of the



HENDY MEN : On the left, Capt. E. W. Percival, and on the right, Mr. Basil B. Henderson. (FLIGHT Photo.)

good course being flown, and the machine was not "placed." Had the same average speed been maintained as that made good from London to Manchester, the "Hendy" 302 would have secured 2nd place. That was not to be, but those who watched closely the performance of the various machines realised that in the "Hendy" 302 one had a new type with an obviously good performance. It could not have beaten Miss Brown, and so on its handicap could not have won the race. But had it secured second place this would have been an excellent advertisement for the machine. There is no reason to doubt, however, that when the "Hendy" 302 is placed on the market it will find a ready sale, its performance and general qualities being sufficient to sell it, even without the advertisement of winning the race.

The "Hendy" 302 is a two-seater, low-wing cantilever monoplane, with the occupants protected by a hinged cabin top.

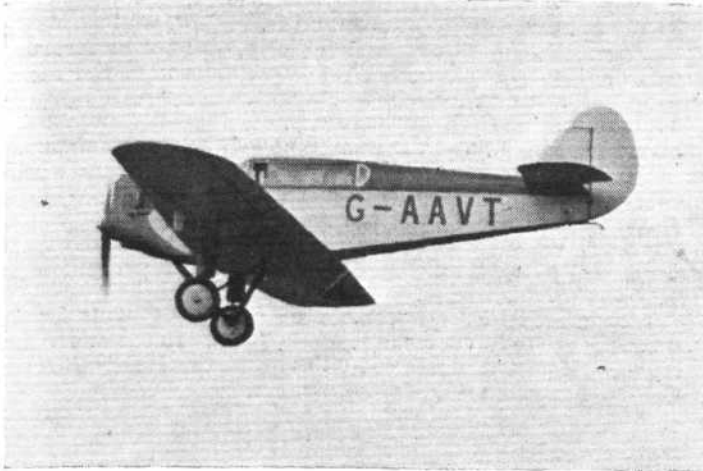
machine, and work was begun at once, as was very necessary in view of the fact that there was but four months in which to design and build the machine and test it out in readiness for the King's Cup Race.

In the experience of every aircraft designer it happens now and then that a certain prototype is absolutely "right" from the very start, and when that happens the final result is always very much better than in the case of a new type which has to have this, that and the other altered before it is absolutely "right." The "Hendy" 302, as the new two-seater was called, proved one of these instances. When it came to be tested it did all that was expected of it in the way of performance—or a little better. It appeared to have no vices, and its controls were effective over the whole speed range. In the King's Cup race, as we have previously pointed out, compass trouble prevented a

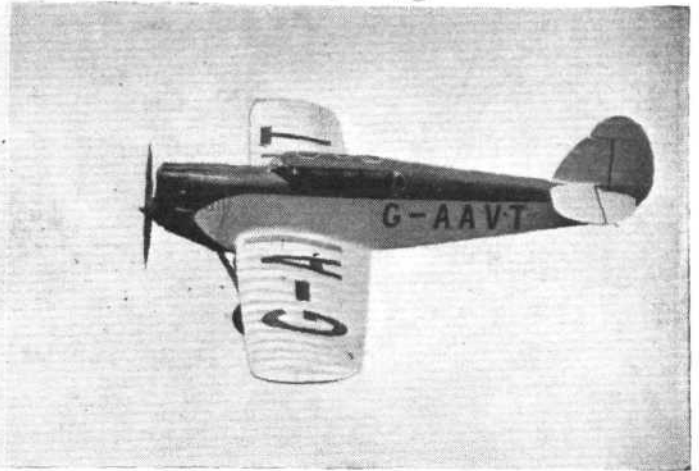
THE BUSINESS END : The cowlings of the "Hermes" engine in the "Hendy" 302 has been carefully designed and although totally enclosed, the engine keeps remarkably cool. (FLIGHT Photo.)



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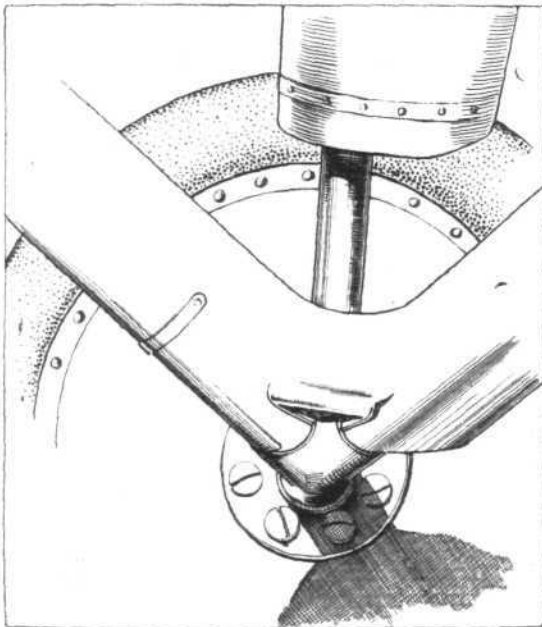
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THE "HENDY" 302 : Flying Views from below and above (FLIGHT Photos.)

It is difficult to believe that in these modern times anyone could object to a cabin, but should any potential purchaser of this machine do so, it would be a very simple matter to unship the hinged top and use the machine as an ordinary open touring aeroplane.

Structurally, the "Hendy" 302 is almost entirely of

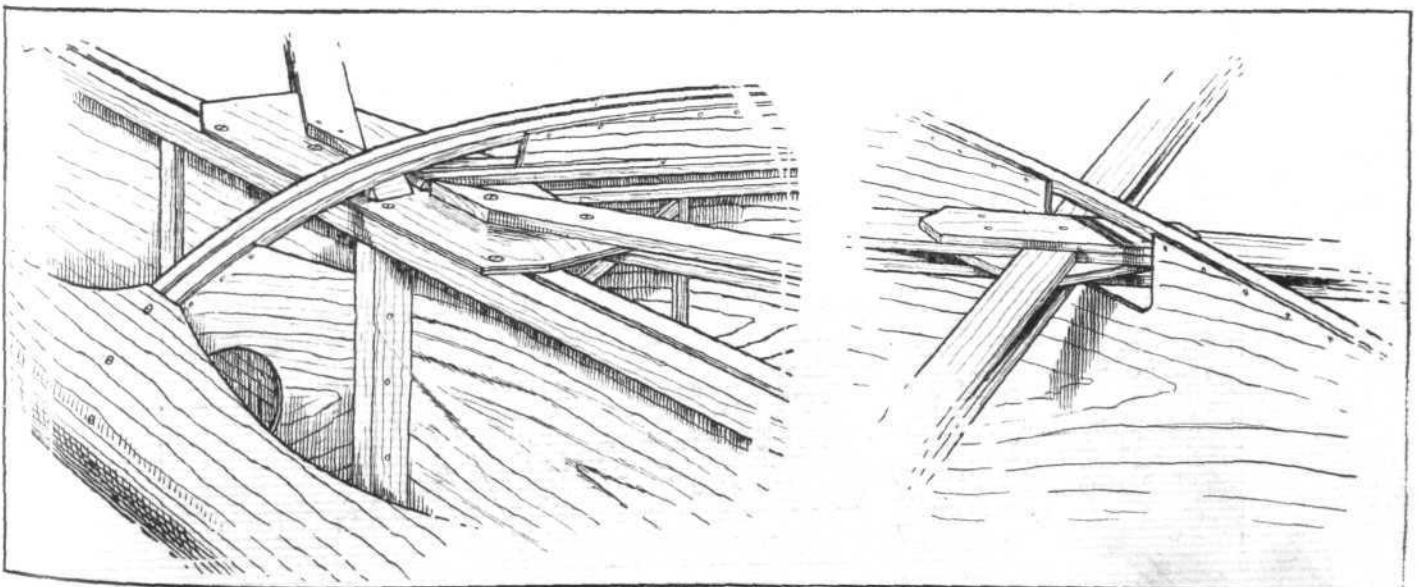


Provision is made, on the "Hendy" 302 for the support of a jack under the axle. (FLIGHT Sketch.)

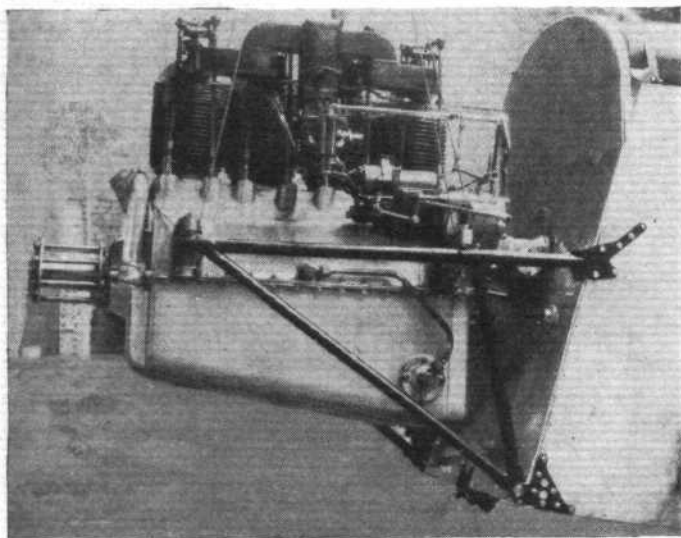
wood construction, the exception being the undercarriage legs, the engine mounting, and a very few metal fittings. Three-ply wood enters largely into the construction, the fuselage being planked with this material, which also serves many purposes in the wing structure.

The cabin is very roomy, and the seats are remarkably comfortable. Contrary to expectations, the view from both seats is very good. For some peculiar reason the chord of the wing seems to "shrink" as soon as the machine has reached a height of a hundred feet or so, and it is then possible from the rear seat to look over the leading edge while the rear seat is far enough back to enable one to look straight down. From the pilot's seat (the front one) the view is also very good in practically all directions, the narrow top of the engine cowl, and the generous window panel area, giving a degree of view which one would scarcely expect from an external examination of the machine.

A novel form of wing construction was, as already pointed out, the main reason for the construction of the little "Hobo," and this has been retained in the "302." The two main spars are I-section beams built up of a single central web of three-ply, with rectangular-section strips on each side forming the flanges, as shown in a sketch. The drag bracing, composed of wooden strips arranged in the form of a lattice, is in top and bottom planes of the spar flanges, and attached to them by three-ply gussets or "biscuits." The construction is very simple and has proved exceptionally strong in torsion. Moreover, it could readily be "translated" into metal construction, and we trust Mr. Henderson will have an opportunity to test his spar design on a metal wing. The wing section is a "calculated" one, in which the centre of pressure is not entirely stationary, but its movement has been kept down to a very small amount. We do not know what is the minimum drag coefficient of the section, nor the maximum lift coefficient, but the speed range of the machine indicates that the section is a good one, and on climb, taking



THE "HENDY" 302 : Mr. Henderson has designed a novel form of main spar bracing, in which the spars are braced top and bottom by lattice strips, anchored at their ends and points of intersection to three-ply gussets. (FLIGHT Sketches.)



THE "HENDY" 302: The mounting of the "Hermes" engine is very simple, and the attachment to fuselage corners is by stirrup plates. (FLIGHT Photo.)

into account slipstream effect, etc., the L/D of the whole machine is about 8.3, which is remarkably good.

The wide-track undercarriage is of the "split" type, and the telescopic legs have spiral springs and oleo gear for absorbing shock and damping bouncing. On the first machine plain wheels are used, but we gather that the production type will have wheel brakes.

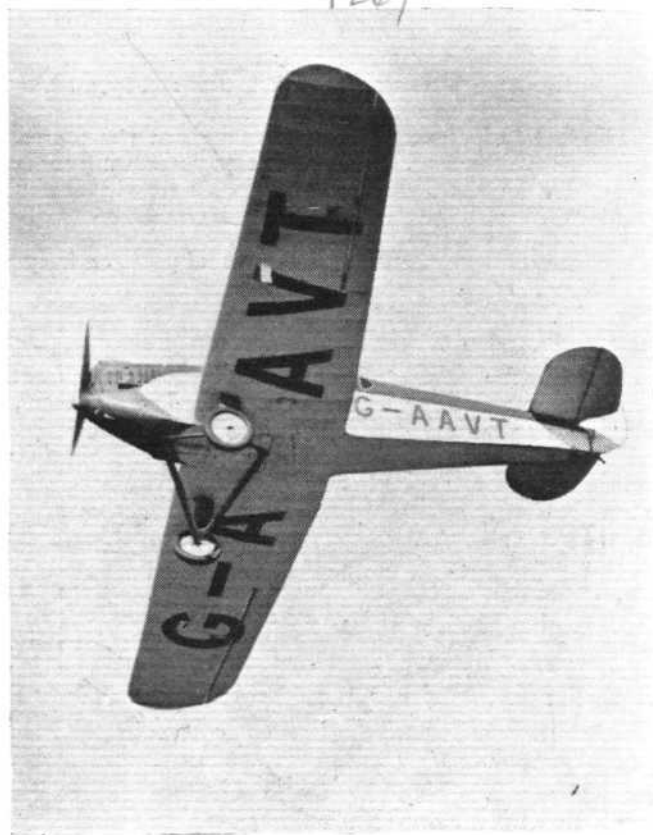
A steel tube mounting supports the engine *en porte a faux*, forked plates securing the mounting to the fuselage corners. The engine cowling is slightly unusual, and has scoops in the top, from which short lengths of tube project down to the cylinder heads, directing the draught on to the hottest parts of the cylinder heads. Normally, the oil temperature does not exceed 50 deg., and even in the King's Cup Race, with the engine running "full out" the temperature never exceeded 70 deg. So that it looks as if the cooling is beyond reproach.

Petrol is carried in the wings. At present there is a tank of 16 gallons capacity in the port wing, and a gravity tank of 9 gallons in the fuselage. If desired, another 16-gallon tank can be put into the starboard wing, thus increasing the total capacity to 41 gallons, or a range of about 750 miles.

We had the pleasure recently of making a flight with Capt. Percival in the "Hendy" 302, and found the cabin very comfortable indeed, although the short exhaust pipes used in the King's Cup Race were still in place, which naturally made the noise greater than it will be in the production

machine. The view, as already mentioned, was a great deal better than one would expect and is, in fact, well above the average. The machine handled nicely, and the performance was obviously good, both in take-off (although the racing prop. was still on), climb and speed. The speed range is, as a matter of fact, unusually great, the maximum being about 132 m.p.h., and the minimum well below the 40 m.p.h. without the machine showing any tendency to fall into a spin. Cruising at 1,900 r.p.m., the speed is 112 m.p.h., and even throttled to 1,800 r.p.m., the speed is still over 100 m.p.h. At 1,900 r.p.m., the fuel consumption is about 6 gallons per hour, giving a mileage of about 19 miles per gallon (at 112 m.p.h.).

We gather that arrangements are now being made for the quantity production of the "Hendy" 302. In the meantime, anyone interested is advised to write to the Hendy Aircraft Co., at Shoreham Aerodrome, Sussex.



This view from below shows the neat way in which the centre-section of the wing fairs into the fuselage. (FLIGHT Photo.)



THE "HENDY" 302: Three-quarter Front View. The engine is a "Cirrus-Hermes." (FLIGHT Photo.)

The Air Exercises 1930

By MAJOR F. A. de V. ROBERTSON, V.D.

(Concluded from p. 933)

ZERO hour, namely, 11 a.m. on Tuesday, when the Blue ultimatum expired, found me at the capital of Red Colony, namely, Cranwell Aerodrome. The weather was very nearly ideal from the point of view of bombing, for masses of cumulus cloud were moving across a bright blue sky. We should not have been surprised if the first Blue raid had attacked the capital before mid-day. We rather looked for the Harts of No. 33 Bomber Squadron to be the first to give the capital a taste of their quality. Air Vice-Marshal Dowding, the Red Commander, had his scarlet flag hoisted above an office on the aerodrome, but he told me that as all the communications were by wireless he regarded his headquarters as a mobile unit, and was prepared to move elsewhere at any moment when he should consider it desirable. I saw no more of him after Tuesday evening, and cannot say whether he moved or not. He also said that he had organised a system of reporting the approach of raids, and events would show how it would work. Naturally he would not explain what that system was. It certainly must have been difficult to improvise an efficient system at such short notice and for such a short time, and it would have been surprising if it had worked to perfection on the first day. As a matter of fact Cranwell was five times taken by surprise that day, and the Umpires have not yet stated how much of the place is still standing. There was a camera obscura there which could estimate pretty accurately where the bombs would have fallen, but it did not publish its findings.

Two squadrons of Siskins were drawn up on the aerodrome, one ready for immediate action, the other held in reserve for night flying. Among the officers of those two squadrons I was glad to recognise two past members of Schneider teams, Sqdn.-Ldr. Slatter and Flight-Lieut. Worsley. The first raid did not actually appear until 1.20 p.m., when everyone except the battle squadron was having lunch in the mess. Then, without warning, through one of the numerous gaps in the masses of cumulus cloud there dived the nine Foxes of No. 12 Bomber Squadron. They came down to 6,000 ft. and then released a timed smoke bomb as an indication that they were bombing Cranwell. The Siskins had had no warning of the approach of the raiders, and, though they climbed as fast as they could, the speedy Foxes had disappeared in the clouds before the fighters had got within range. The Sidestrands of No. 101 Bomber Squadron appeared 15 minutes later, but the Siskins were still in the air, returning from their vain chase of the Foxes. The Sidestrands duly dropped their bombs, but as they turned back the Siskins engaged them with their camera guns. It was not until nearly 5 p.m. that we were given a first taste of the Harts. Then three of them appeared and, after duly bombing us, they circled three times round and came down low to have a good look at the squadron markings on the Siskins on the aerodrome. The efforts of the Siskins to take off one at a time and climb after the Harts were almost pathetic; but, of course, even interceptor fighters

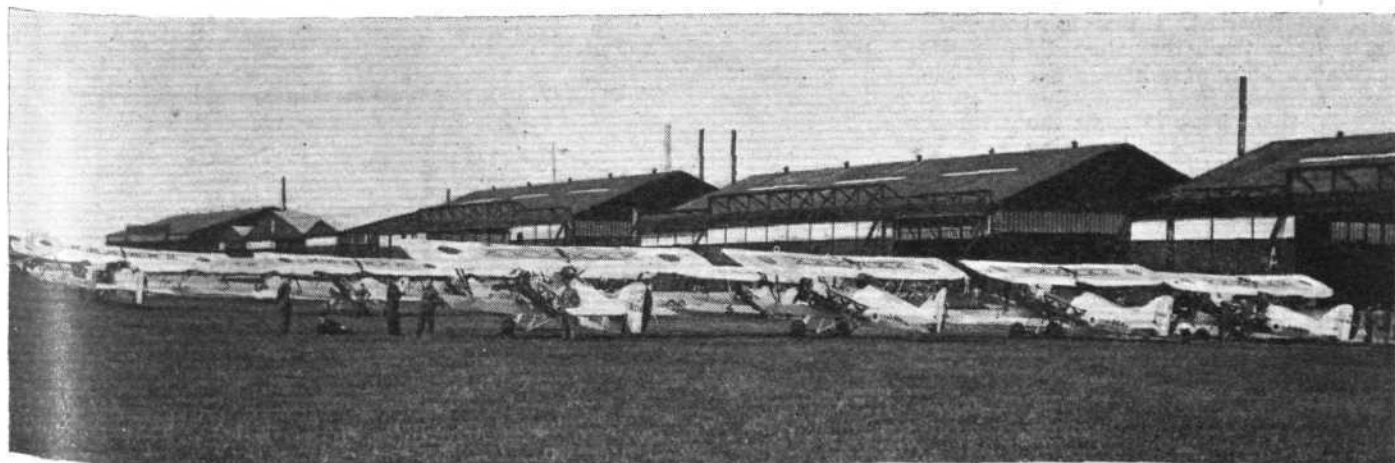
could not in such circumstances have caught the Harts before they reached the shelter of the clouds. Half an hour later three more Harts appeared, and also did just what they liked. At 6.0 there appeared a formation of bombers consisting of one Wapiti and two D.H.9A's. They were certainly an Auxiliary Squadron not yet fully re-equipped with Wapitis, and possibly were No. 601 (County of London) Squadron. This time three Siskins were in the air. They were not in formation, and they did not wait to take up formation, which would surely have been a wise precaution. Each on its own engaged the rear gunners of the three bombers, and I should think each Siskin must have found its reception very hot. That ended the day's work. It had not reflected very much glory on the Red defence, while the Blue attack had done very well indeed.

At night the Red intelligence was better, and the show put up by the searchlights and by the night-flying squadron of Siskins, namely, No. 111 F.S., was not at all discreditable to the Red force. Still, so constant was the stream of night bombers which came over and attacked Cranwell and Grantham, that the defence could not really cope with them. The searchlights constantly converged accurately on a spot of the clouds which hid an approaching Virginia. More than once it happened that observers on the ground could see above the bank of clouds, and could spot the navigation lights of a bomber at which the searchlights were pointing. The first warning came through just before midnight, and two Siskins promptly went up. This action was beautifully timed, and one Siskin got under the tail of the Virginia and fired a green Very to show that he had hit his mark. The rule was that a fighter must remain for three minutes under the tail of a bomber before giving the green signal. This bomber apparently did not know that it had been sent down in flames, for it came serenely on and fired a red Very light to indicate bombing. After bombing each raider had to flash out its identification mark, and when it did so it became "dead ball," and could not be shot down.

The next two night bombers got over the aerodrome and fired red Verys to indicate bombing before any Siskin came to terms with them. There were now four Siskins in the air, and it was held that not more than four could work at night in such a small sector. But six bombers came over before I left at 1.30 a.m., and only two of them were shot down by the fighters. While driving back to Grantham in the small hours I saw the lights of three more raiders, and even after I had gone to bed the last sound I heard was the drone of twin Napier Lions overhead.

The communiqués told us that the Red fighters had carried out a vigorous offensive on the Blue aerodromes all day, so Blue did not have things all his own way. But from the point of view of an observer at Cranwell it seemed that all the odds were on the side of the Blue attackers.

In almost any war or manoeuvres the impressions of an eye-witness are likely to be fallacious. My day and night at Cranwell gave the impression that the capital of the wealthy



No. 29 Fighter Squadron at Cranwell, waiting for raiders. (FLIGHT Photo.)



The night bombers of No. 99 Bomber Squadron at Waddington. (FLIGHT Photo.)

Red Colony was having a very bad time, and that its system of information was not working at all well. The searchlights round Grantham did great work at night. They belonged to regular Royal Engineers of the Army, and their sound-locators were evidently very successful in discovering night bombers flying above the banks of clouds. What we at Cranwell did not know was what information had been received by Red H.Q. of the progress of a raid before it came within the ken of the searchlight companies. Had any of these night bombers been shot down before they reached Cranwell? The official communiqué next morning threw no light on this point. In fact, it was itself not too well informed, for it said that no combats over Cranwell by night had been reported, whereas I had myself witnessed the destruction of two of the Blue night bombers. The same communiqué said that it was believed that 13 Red machines had been destroyed on the ground during daylight on Tuesday. Having seen five formations of day bombers do what they liked over Cranwell during that day, and at least five night bombers equally successful, I found it hard to believe that any of the two fighter squadrons at Cranwell could have survived at all.

Wednesday, August 13

On Wednesday I moved over into the Blue Colony, and went to Andover to see how the Blue H.Q. was faring. As my move was not made by air, it naturally took some time. Having heard that Air Vice-Marshal Dowding had pursued a vigorous policy of attacking Blue aerodromes, especially with his fighter squadrons, I was rather surprised to find the buildings of the Air Staff College and the H.Q. of the Wessex Bombing Area looking much as usual. The architectural beauty and dignity which marks these august buildings had not been marred. On the aerodrome stood a number of the Sidestands of No. 101 B.S., which had treated Cranwell in so cavalier a fashion the day before. As I watched, over the tops of what may one day be the spires and domes of the college hopped three mischievous little Gamecocks of No. 23 F.S., which at once proceeded to play Old Harry with the Sidestands and the sheds. It was a cheerful, though a cold-blooded, little episode, and only took a few minutes. The Gamecocks took up formation again, and departed. It may have been well for them that they did not delay. They were hardly out of sight when, from the other direction, there hove in sight the Foxes of No. 12 B.S., coming home from a raid. If only they had arrived a few minutes sooner and caught the Gamecocks at their work of destruction, there might have been some dirty work at the cross roads.

Not many minutes later I saw three Fairey III F's, which were on the Red side, making for Andover high up, and being vigorously attacked by three Blue Siskins. A spectacular battle was in progress, the fighters repeatedly diving at the tails of the bombers, climbing

up underneath them, and pursuing every manoeuvre calculated to work the destruction of the raiders. Doubtless the rear gunners in the Faireys were trying to give as good as they were getting, but camera guns give no information to watchers on the ground below. From this it appeared either that the Blue commander, Air Vice-Marshal Sir John Steel, was getting better information than the Red commander had been getting the day before, and so was able to take timely steps to intercept raids on his H.Q., or that this flight of Siskins had been lucky in spotting the Faireys.

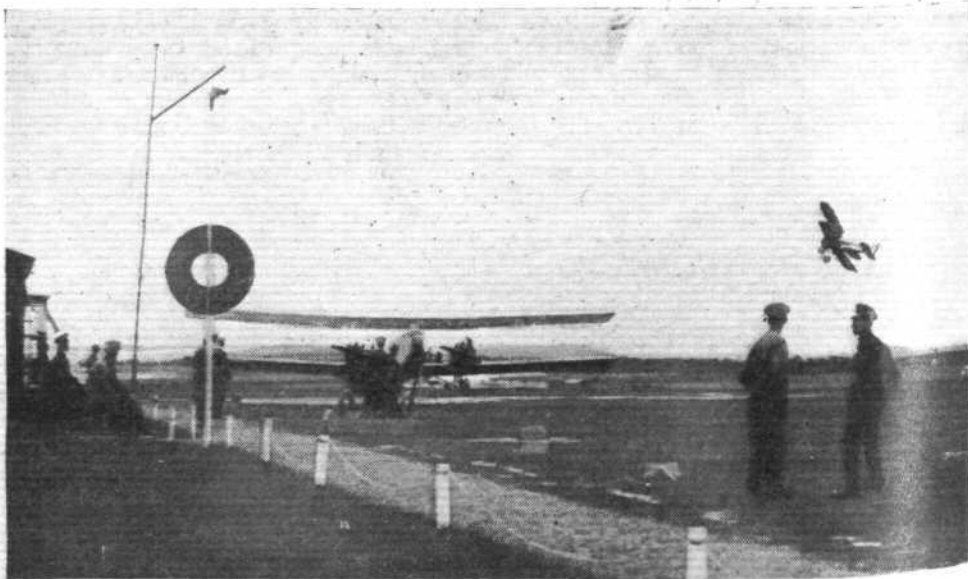
The Prince of Wales's Adventure

A propos the Fairey III F's, both squadrons of which, Nos. 35 and 207 B.S., were on the Red side, Group Captain H.R.H. the Prince of Wales had that day decided to fly in a Fairey III F on a raid over Red territory. So Sqdn.-Ldr. Don took him down to Andover for a start. On the way some Blue Siskins saw the solitary Fairey, and thought that they were indeed in luck's way. They did not wait to look for squadron markings on the fuselage, but proceeded to attack it for all that they were worth. When their spirits are high, fighter pilots are sometimes rather apt to put dash before caution. No doubt, the Prince enjoyed the fun of the fight, but I understand that Sqdn.-Ldr. Don was quite relieved when he got his precious charge safely down on the aerodrome. Afterwards the Prince went off on a raid for Cranwell.

Thursday, the 14th, was the last day of the manoeuvres. The original intention had been to continue until the raiders of Friday night had got back home; but by Thursday night everything had been done which, it seemed, could be done, and further operations could only be repetitions of previous activities. Accordingly, the League of Nations intervened, and hostilities ended at 3.30 a.m. on Friday morning.

Some Reflections on the Manœuvres

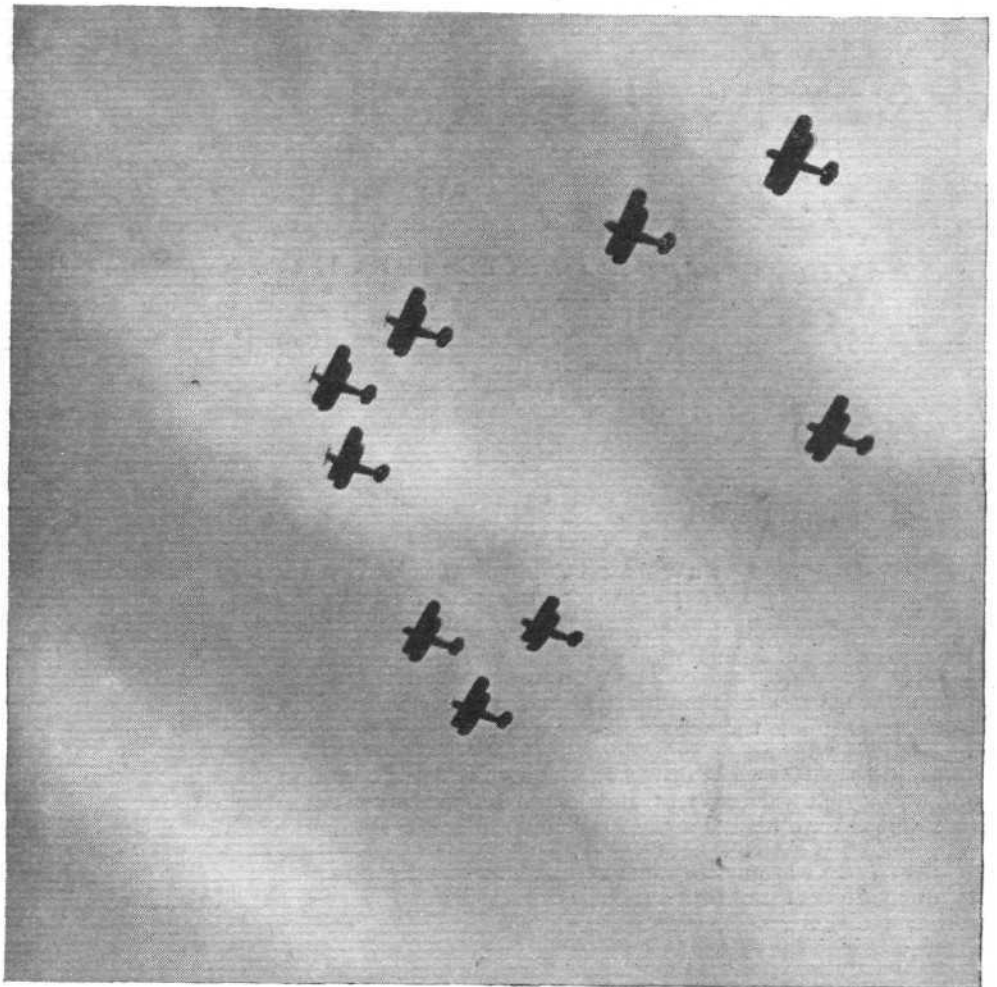
At the end of all manoeuvres, whether by sea, land or air, everyone, except the Grand Staff, asks, "Who has won?"



A Flight of No. 23 Fighter Squadron catches the Sidestands of No. 101 B.S. at Andover. (FLIGHT Photo.)

Even "models of modern Major Generals" still, in all probability, grow as heated on the subject as they used to do before the War, and doubtless air vice-marshals are no less testy; while victory is proved beyond all possibility of doubt in the sergeants' messes. A special correspondent must be on the side of the angels, *i.e.*, the directing staff. He has not staked his reputation or his substance on either the Red or the Blue; in fact the question of who won does not interest him at all. The final communiqué issued by the Air Ministry says: "It will be impossible for some time to reach any useful conclusion on the results of the recent exercises. Before considered views can be formed, the whole of the umpires', recording officers', camera obscura, and range officers' reports must be carefully scrutinised, and the directing staff must reach decisions as to the co-ordinated value of all combats and bombing operations. The time factor in exercises of this nature is of vital importance, since an apparently successful combat may, due to earlier operations by the same aircraft, be ruled as unsuccessful, or as not having taken place." By the time that the directing staff has been able to form its opinions all interest in the manoeuvres will have evaporated, except among the few who study air strategy and tactics for their own sake. It is certainly to be hoped that those students will be given a chance of studying the final findings.

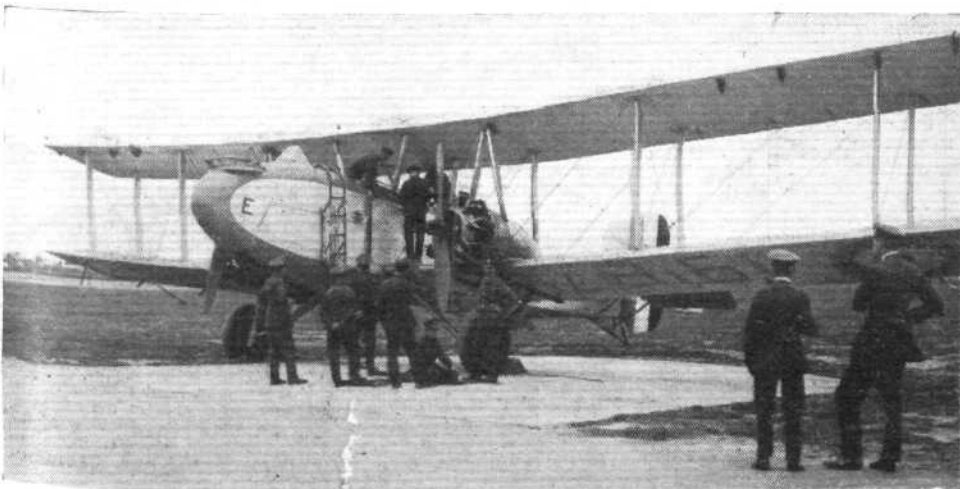
Artificiality seems to be more pronounced in air manoeuvres than in manoeuvres by the other two services. An Army unit may be ordered by an umpire to retire; but an aircraft which is considered to have been shot down always proceeds calmly on its way. What is more, all the machines of a squadron may have been bombed into matchwood on their own aerodrome before a raid began, but that squadron always carries on as if the Stores Depots and Parks could give Pandora's box a start and a beating. The supply of replacements of machines and pilots is considered to be instantaneous and inexhaustible. Consequently no eyewitness could form any opinion of the effectiveness of Air Vice-Marshal Dowding's efforts to cripple the offensive of Air Vice-Marshal Sir John Steel. The former, that is, the Red commander, had a great supremacy of fighter squadrons. In the scheme for the defence of London the fighter squadrons are regarded as purely defensive. They do not take to



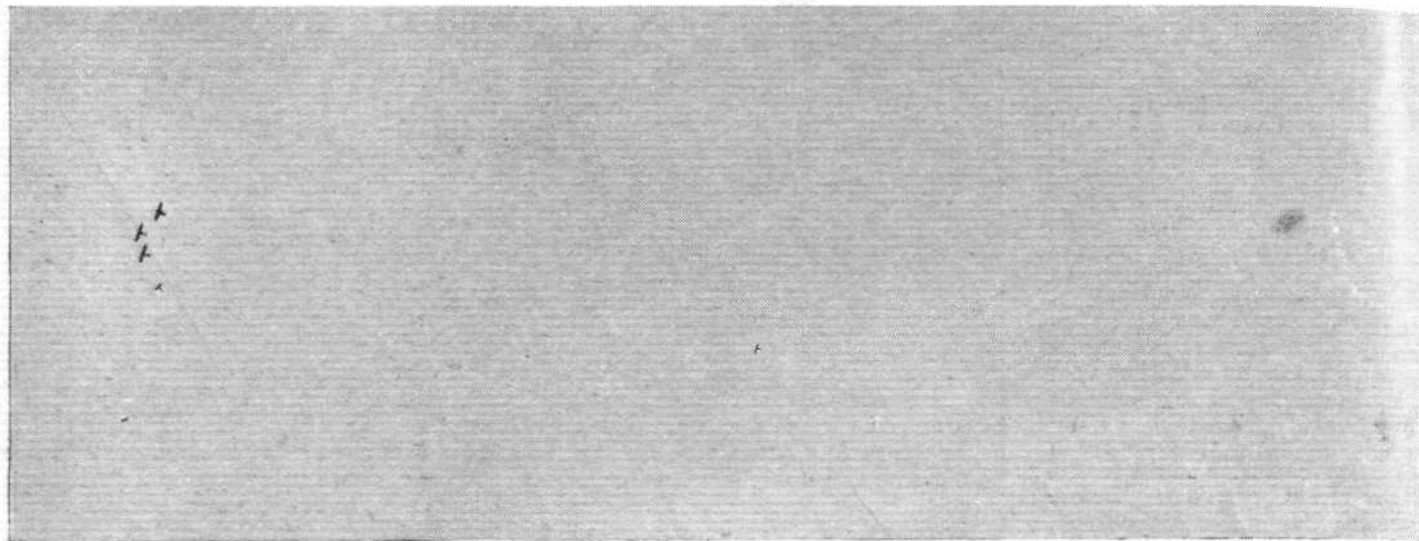
No. 12 Bomber Squadron (Foxes) coming home to Andover from a raid.
(FLIGHT Photo.)

the air until a raid is reported to be nearing their sector, and then they are ordered up by the H.Q. of the Fighting Area. Admittedly it is preferable to destroy hostile bombers in their nests instead of waiting until they have crossed the Channel. Such destruction might be wreaked by our bomber squadrons, but no one imagines that hostile bombers would start for a raid on England from an aerodrome which would lie within the range of our fighters. So in the defence of London the fighters only operate at home. But in the circumstances of the manoeuvres it became possible to use fighters to attack hostile aerodromes, and Air Vice-Marshal Dowding adopted this policy and carried it out with great vigour. I saw three Gamecocks practically put the Sidestrands of No. 101 B.S. out of action in about three minutes. At least so it appeared to me, though I do not know what the umpires said about the incident. Nor

can I say whether the Blue command was surprised by this unorthodox use of fighters or not. It was a clever adaptation of means to circumstances. It appeared, though I speak without full knowledge, that this aggressive use of the fighters left the Red Colony short of defenders. That would not matter if the Blue machines were destroyed; it would have proved once more the old saying that attack is the best form of defence. But the results were not apparent to the eyewitness. Bombers came over Red territory whether they had been theoretically destroyed on the ground or not; and there seemed all too few Red fighters to meet them. We could not tell whether the Red commander's tactics had been justified by results or not. All that we could say was that this form of aggressive tactics seemed



Refuelling a Sidestrand. (FLIGHT Photo.)



Blue Siskins intercept a raid on Andover by Fairey III F.'s, but the bomb signal (the puff of smoke on the right of the picture) has been dropped. (FLIGHT Photo.)

to be a good way of defending the mineral wealth and railway system of his colony. We could admire the originality of the idea of using fighters in an unusual way in circumstances which justified such use; though we had to remember that such opportunities will not occur in every campaign. We could admire the accurate work of the R.E. searchlights by night, and reflect that this part of the air defence organisation ought certainly to be under the Air Ministry—not under the War Office. We could note the apparent failure of Red H.Q. to receive warnings of raids by day, and could consider the difficulties of improvising an efficient system of intelligence at short notice for a short period.

One can just conceive the possibility of a campaign like this war between the Red and Blue Colonies taking place, say, in Australia. It would be an exceptional campaign. In most cases of two adjacent Colonies fighting each other, there would be military forces engaged, and the aircraft would act largely as army aircraft. The bombing of aerodromes which are within the short range of our existing fighters would seem to be normally a function of Army machines, not of Air Force machines. Two-seaters of high performance would seem to be indicated for such work. The army co-operation squadrons have recently been experimenting in the use of the Hart for their work, and it seems possible that before long this machine may become the standard equipment of those squadrons.

These manoeuvres emphasised, though they did not teach, the need for high performance in our fighter aeroplanes. The Siskin is admittedly obsolescent, and it would be flogging a dead horse to say much about the futility of sending up Siskins off the ground to catch Harts or Foxes. We have now two squadrons equipped with Bulldogs, and one now in process of receiving them. We should like to see the out-turn of Bulldogs very much expedited, and we look forward to the appearance, as soon as possible, of a squadron of interceptor fighters equipped with the Hornet. We also hope that the complete equipment of our day-bomber squadrons with the Hart will proceed with due celerity. Air Vice-Marshal Dowding is soon to become Air Member of the Air Council for Supply and Research. We hope that the experiences of these manoeuvres will strengthen his hand in dealing with all these matters.

On the Blue side, Air Vice-Marshal Sir John Steel distinguished himself by using his night-bombers for day bombing. Eight night-bombers used their range to fly by day through the Sealand gap, turn the flank of the Red defences, and effect a complete surprise. This also provides food for thought. In any war there will probably be chances for making long bombing raids of this description by day.

The conditions of day and night bombing are different, and it would seem that a special long-range day-bomber ought to be evolved. Sir John Steel assumes the command in India next year. He has shown himself the type of commander who is capable of originality and initiative, and there he will find problems which will give full play to his powers.

The following press communiqués were issued by the Air Ministry during the exercises:—

10.00 Hours. Tuesday, August 12, 1930.—No reply has been received from Redland to the ultimatum presented by Blueand. War may therefore be regarded as inevitable.

18.00 Hours. Tuesday, August 12, 1930.—Immediate activity on both sides followed the expiration of the ultimatum at 11 o'clock this morning. Following a reconnaissance, Red bombers in small formations carried out a series of raids on Upavon, Worthy Down and Tangmere. They were intercepted by formations of Blue fighters and many engagements took place. Manston was simultaneously attacked by formations of high and low-flying aircraft. Day bombers operating at 4,000 ft. and fighters at 150 ft. pressed home attacks on the hangars and on aircraft observed on the ground. These attacks were followed by a low flying raid on Lympne, carried out by fighters. At this aerodrome also a number of aircraft were discovered on the ground.

Attacks have been carried out by Blue day bombers on the smelting works at Bircham Newton and Hucknall, upon the naval port of Skipsea, and the capital of Red Colony, Cranwell. The Umpire Staff have not yet assessed the results of the air fighting and of the bombing attacks.

23.00 Hours. Tuesday, August 12, 1930.—A heavy offensive has been maintained throughout to-day by Blue Aircraft against a number of important objectives in Red Colony. In addition to the attacks reported in the last communiqué upon Bircham Newton, Hucknall, Skipsea and Cranwell, the port of Catterick, from which all minerals from Red Colony are shipped, was heavily attacked by a considerable force of heavy bombers. As a result of the long distances involved in the majority of the Blue operations and the consequent late return of the aircraft, the Umpires have not yet determined the damage done.

The complete results of the attacks by Red aircraft upon Blue Colony have also not yet been fully determined, but the following casualties have been awarded:—

At Manston five Blue aircraft were destroyed, and eight damaged.

At Tangmere one aircraft was destroyed and one damaged.

One Red fighter was shot down.

The weather conditions have been uniform in Red and Blue Colony and have been particularly suitable from a training point of view. There has been broken cloud at from 2,000 to 3,000 ft., with rain showers in various parts of the country at intervals.

23.45 Hours. Tuesday, August 12, 1930.—As a result of attacks on the Blue Force aircraft depot at Tangmere, by Red aircraft, four Blue aircraft were destroyed and eight damaged.

Information has been received that one particularly successful raid was made to-day by Blue bombers on Cranwell. Surprise was complete, and the defending Red aircraft did not succeed in getting off the ground until the attack had been carried out and the Blue aircraft were on their way home.

A rapid change of base was effected by certain squadrons at one of the Red Colony aerodromes to-day. Having sighted a Blue reconnaissance machine, and realising that their presence must have been discovered, they moved to other aerodromes during the afternoon, and are now once more in operation from their new bases.

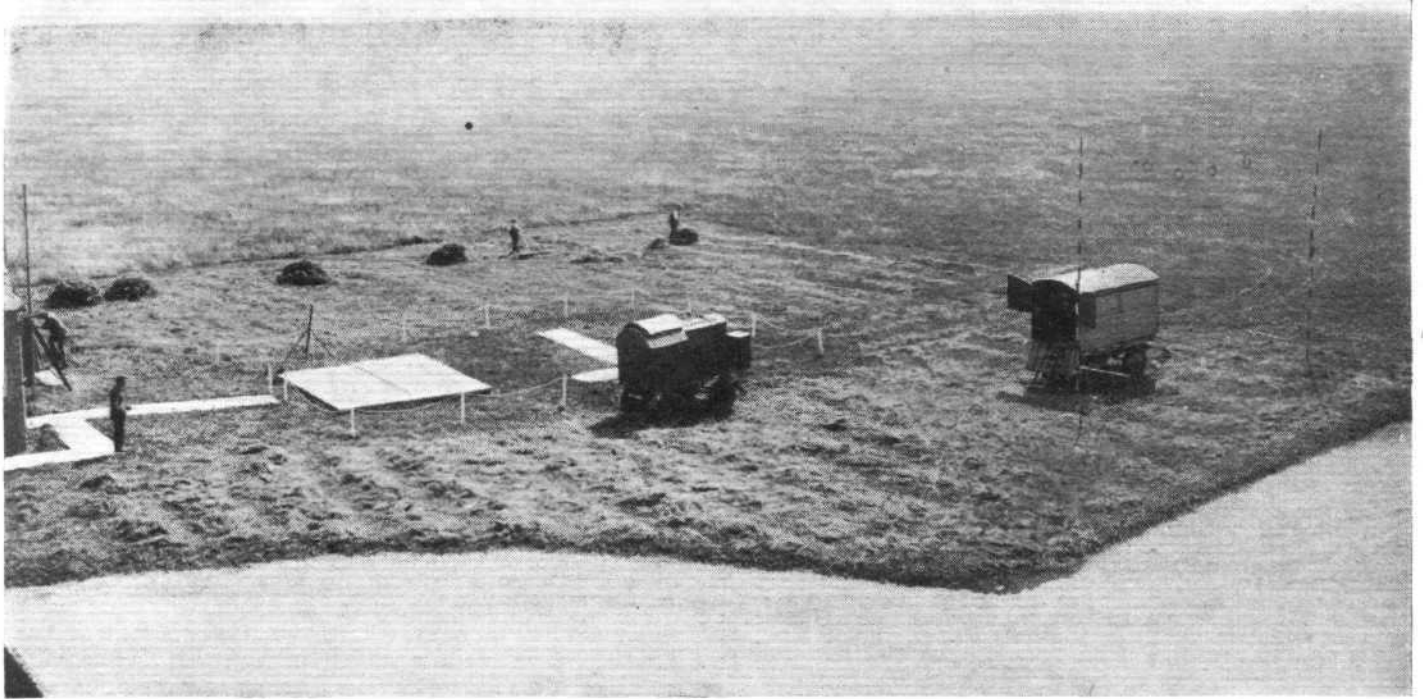
10.30 Hours. Wednesday, August 13, 1930.—The outstanding event of yesterday's operations was the daylight raid by Blue heavy bombers against the port and canal locks at Catterick. Eight machines, in spite of exceptionally unfavourable weather conditions invaded Red territory via the Sealand Pass, crossed the Pennine Range, effected a complete surprise and in the absence of opposition were able to carry out an unhurried bombardment of points of vital importance to Red Colony.

During the evening a large number of attacks against Andover, Lympne, Manston, Tangmere, Worthy Down and Upavon, were carried out by Red Colony low-flying fighter aircraft and day bombers. These attacks continued until 20.00 hours. Blue Colony, on the other hand, was content with attacks by small formations of bombers on Cranwell, Hucknall and Skipsea. Both sides, however, showed considerable activity during the night. In spite of unfavourable weather conditions, no less than 20 separate attacks were made by formations of Red aircraft. Blue Force Headquarters at Andover, the Aircraft Depot at Tangmere, and the aerodromes at Andover, Tangmere, Upavon, Lympne, Manston and Eastchurch were the object of harassing attacks intended to hinder the night operations of the Blue Force commander. The latter was operating, due to his successful use of part of his heavy bombers in the day attack on Catterick, with a reduced strength. None the less, he pressed home a series of attacks against Cranwell and Bircham Newton. The latter station, which escaped serious damage yesterday, due to the interception of the attack by Red fighters, received particular attention. The Red Commander evidently anticipated strong attacks on Cranwell, and carried out constant night patrols by fighters in conjunction with his searchlight defences. No combat in the area has, however, been reported. The Umpire Staff have found great difficulty in assessing casualties in air fighting and bombing, and definite results are still not available. In view of the heavy air fighting and the numerous bombing attacks, however, casualties to personnel and material on both sides are expected to be heavy. The following figures as regards aircraft casualties to date are purely tentative.

It is believed that 23 Red machines have been destroyed and 10 damaged. Of these 13 were destroyed and 10 damaged in air fighting.

As regards Blue aircraft, it is claimed that 34 have been destroyed and 47 damaged. Only eight of these casualties occurred in air fighting, and the

9135



Wireless Lorries. (FLIGHT Photo.)

remainder are largely due to the energetic bombing of Blue's aircraft depot at Tangmere.

This morning (August 13), operations started with high and low attacks, of the type favoured by the Red commander, upon Andover and Upavon. Operations are proceeding.

18.00 Hours. Wednesday, August 13, 1930.—Blue attacks to-day were principally directed on Cranwell, Hucknall and the anchorages at Skipsea and Donna Nook. The attacks on the latter objectives were due to information having been received in Blue Colony that the heavy attack on the port of Catterick yesterday had caused the diversion of shipping and an attempt would be made to ship minerals from the naval anchorages. Large convoys were understood to be due at noon to-day at both Skipsea and Donna Nook. The morning attacks on Cranwell were initiated by a squadron of day bombers followed by a series of raids by flight formations of fast bombers. Red fighters succeeded in engaging several of the bombing formations, and one of the squadrons was engaged over Blue territory by a squadron of Red fighters. A lively engagement ensued, and heavy casualties on both sides are probable.

Red aircraft, both bombers and fighters, continued their offensive against Blue aerodromes, particularly at Upavon, Manston, Andover, and Eastchurch. Many of these attacks caught Blue aircraft on the ground. Blue fighters were, however, active in defence, and various engagements ensued. Hence, it has not yet been possible to estimate the casualties and damage.

The weather has been generally extremely favourable for training. There has been a light westerly wind, sky almost entirely covered with cloud at heights varying from 1,000 to 3,000 ft. A few light showers have occurred in places. Visibility has been good.

22.30 Hours. Wednesday, August 13, 1930.—The feature of to-day's operations has been the success of the offensive carried out by Red aircraft against Blue aerodromes. Eastchurch was attacked during the morning by a squadron of day bombers and two squadrons of fighters. At 10.05 hours a squadron of fighters dropped explosive and incendiary bombs on nine day bombers which were being put into the hangars. At 11.16 hours a further ton of bombs was dropped on the hangars. At 12.40 hours a squadron of fighters dropped incendiary bombs. It is estimated that as the result of these three co-ordinated attacks the Blue aircraft at Eastchurch were destroyed.

A further successful Red attack was made during the afternoon on the aerodrome and depot at Tangmere. Heavy damage to the depot sheds and aircraft is claimed. In addition, one aircraft on the aerodrome is understood to have been destroyed and two to have been damaged.

Bombing attacks were also launched against Andover and Upavon aerodromes by formations of Red bombers. Six Blue aircraft are claimed to have been destroyed on the ground, and 10 damaged.

During these attacks there was considerable air fighting. A formation of six Blue fighters attacked a Red formation approaching Upavon. One of the fighters was destroyed. An offensive patrol of eight Red fighters came in contact with a formation of four Blue fighters near Upavon. Two Blue aircraft were destroyed, and one Red was damaged. On the other hand, a Blue fighter patrol operating in the Andover-Upavon Area succeeded in shooting down three Red reconnaissance aircraft.

Blue attacks have been carried out on Cranwell, Hucknall, Bircham Newton, and the anchorages at Skipsea and Donna Nook. Two very successful attacks were made on the smelting works at Bircham Newton, and serious damage was done to the factory buildings.

Fifteen Blue aircraft at intervals attacked shipping in the Red anchorage at Skipsea and considerable damage was caused.

The Red capital and Headquarters at Cranwell were attacked four times during the day by a Blue squadron of bombers. Red fighters intercepted three of these attacks, but no casualties have so far been reported.

Heavy fighting occurred in the neighbourhood of Sheerness and Manston during the day. A squadron of nine Blue bombers returning from a raid on Skipsea were attacked over Sheerness by Red fighters. The fight lasted 20 minutes and resulted in two Red fighters being destroyed and two damaged. Two Blue bombers were shot down.

Nine Blue bombers were attacked by nine Red fighters over Manston. A five minute engagement resulted in two fighters and one bomber being shot down.

During the day H.R.H. The Prince of Wales visited the Directing Staff at Uxbridge and Blue Headquarters. He subsequently accompanied a Blue

bombing raid against Cranwell, and visited the Headquarters of Red Colony. The weather has deteriorated slightly.

10.30 Hours. Thursday, August 14, 1930.—During the earlier part of yesterday evening two formations of three Red bombers attacked Andover aerodrome from a height of 2,000 ft. Two aircraft on the ground were destroyed and five damaged. One of the attacking aircraft was shot down by the ground defences. The second formation was also attacked by a patrol of three Blue fighters, but the combat was declared indecisive.

Later, Worthy Down was raided by a formation of five fighters, which succeeded in destroying one twin-engine bomber and damaging a second. Two of the attackers were shot down by the ground defences. The remainder, on their return journey, met a formation of eight Blue bombers, which in spite of shortage of ammunition, they attacked. As a result, one more fighter was shot down.

Whilst these raids were taking place, nine Blue fighters attacked the aerodrome at Upper Heyford with satisfactory results. They found a number of twin-engine and single-engine bombers on the ground, and with bombs and machine gun fire destroyed two and damaged three. Two of their own machines were, however, shot down by the ground defences.

The weather began to deteriorate seriously at dusk. Rain in the western area and low clouds hampered the operations of the night bombers. Blue aircraft, however, were able to attack the Red aerodromes at Bicester and Upper Heyford with heavy bombs. Northolt was similarly attacked, but here the raiders met with heavy opposition. One was shot down by defending fighters after it had released its bombs, and a second was driven off. In the course of the fighting one fighter was shot down and destroyed. Heavy and successful attacks were also carried out on Kenley and Biggin Hill.

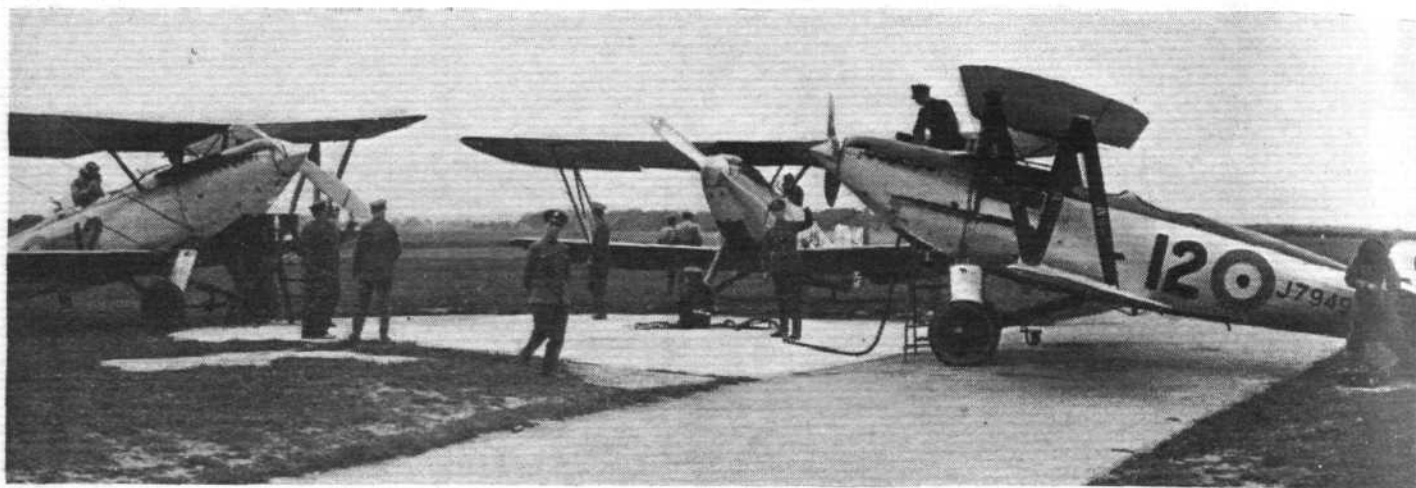
At 23.45 hours the weather was such as to make any further night flying impossible, and operations were accordingly suspended by the Directing Staff until dawn this morning.

18.00 Hours. Thursday, August 14, 1930.—To-day the weather conditions have shown a marked change. There has been strong wind reaching gale force at times, with variable skies and occasional showers. Owing to the greater distance which his bombing aircraft have to travel to reach some of their objectives, the Blue Commander's difficulties have been much increased by this change. None the less, attacks have been carried out on Hucknall, Skipsea, Bircham Newton and Upper Heyford. Bircham Newton was twice raided by bomber squadrons, but as the first of these formations encountered a squadron of Red fighters before reaching the objective, this particular raid was probably abortive. The second raid was carried out by an Auxiliary squadron which successfully reached the target, but had to fight its way home in the face of opposition by Red fighters.

A particularly successful raid was carried out on shipping anchored at Skipsea. The bombers carrying out this raid met very difficult weather conditions, and were in the air over five and a half hours.

To-day, the Red Force has shown very great activity. Commencing shortly after dawn with a series of destructive raids on Andover, Upavon and Worthy Down, Andover was again subjected to a heavy attack by bombers and low-flying fighters at 10.15 hours. Opposition from Blue fighters was encountered, and there was some lively air fighting. Manston and Eastchurch were both heavily attacked. At Eastchurch a squadron of day bombers was caught leaving the ground, and was closely attacked by a squadron of fighters. Casualties and damage at this aerodrome must have been heavy, particularly as a short time later a further combined attack by a fighter and a day bomber squadron took place. Red forces also claim to have caught Blue aircraft on the ground at Lympne, and subjected these to a low bombing attack.

23.30 Hours. Thursday, August 14, 1930.—To-day the most interesting event has been the major operation carried out by Blue Forces against Cranwell and Hucknall. The experiment of using heavy night bombers for daylight raids, which had proved so successful previously against Catterick, was repeated. In order to draw off the defending fighters both centres were first attacked by squadrons of day bombers. In addition a squadron of day bombers attacked the Red aerodrome at Duxford, and then proceeded to the neighbourhood of Northolt, in order to engage the attention of any Red fighters located at these aerodromes. As a final precaution a strong fighter patrol was kept in the air in the neighbourhood of the Reading Pass to hinder any pursuit of raiders returning to their own territory. With these preliminaries, Cranwell was attacked between 18.25 and 19.00 hours by 18 day and



Refuelling the Foxes of No. 12 B.S. (Flight Photo.)

eight heavy night-bombers. Red fighters put up an active opposition, but it is claimed that the attack was none the less carried out successfully. Umpires' results are not yet available. It is known, however, that one night bomber made a forced landing in enemy territory, and that the remainder were attacked for a second time on landing at their base. Heavy bombers also attacked Hucknall, and meeting with no opposition, carried through a successful operation, returning without casualties.

Red forces this afternoon attacked the Blue aerodromes at Manston, Worthy Down and Andover. Considerable opposition was experienced from Blue fighters. Manston was again attacked, and low flying raids were carried out against Andover and Worthy Down. Particularly successful results are claimed at Andover, but details are not yet available.

A feature of the day was the amount of air fighting, particularly between fighter and fighter, in the vicinity of the Reading Pass.

The weather has been very gusty. Wind from the north-west has reached gale force at times. Visibility has been good.

10.00 Hours. Friday, August 15, 1930.—Early yesterday evening a Red force of nine low flying fighters and nine day bombers raided the Blue depot at Tangmere, destroying 11 and damaging 13 aircraft; in addition, a Blue aeroplane starting out on reconnaissance was shot down. Red losses were limited to one fighter shot down by ground defences. Manston and Eastchurch aerodromes were also attacked. Two Blue aircraft were damaged and one Red machine was shot down by the defences.

A formation of single seater fighters found a number of aircraft on the ground at Andover and Worthy Down, and succeeded, at the cost of one casualty, in damaging two Blue machines. On the return journey they

encountered some of the heavy bombers returning from the daylight raid on Cranwell, mentioned in Communiqué No. 11, and in the ensuing fight brought down two of them with the loss of one machine. The last daylight operation was a raid by day-bombers on Andover. Only a few aircraft were on the ground at the time of the raid. Two were damaged.

With darkness, intense activity was displayed by both sides. Forty-six separate raids were undertaken, 24 by Blue and 22 by Red. Blue concentrated their efforts against Cranwell, no less than eight separate raids being carried out in close succession. Red fighters, however, succeeded in each case in locating the raiders and engaging them. The results of this fighting are not yet known. Later, attacks were made on the aerodromes at Bicester, Upper Heyford, Biggin Hill, Kenley and Northolt. At Northolt, two out of the three attackers were engaged by fighters sent up against them.

Red night bombers were also active, and carried out a succession of raids on Upavon, Andover, Lympne, Manston and Tangmere.

The weather was almost ideal for these operations—clear sky, good visibility, and decreasing wind.

At 03.00 hours the following message was despatched to the Commanders of Red and Blue Forces:—

"A proposal by the League of Nations to settle the dispute between Redland and Blueand has been accepted by both. . . In consequence, the two countries have agreed to terminate hostilities at 03.30 hours Friday, August 15, 1930."

The High Commissioners of Red and Blue Colonies accordingly issued instructions that all hostilities should cease from that hour, and that aircraft should return to their Stations.

MAKING AERODROMES

AERODROMES have for a long time been considered merely as open spaces of suitable fairly flat ground, and in many cases they are far from being so, nor are they even free from holes. Nowadays those responsible for aerodromes are beginning to realise that the surface must be properly prepared in order for it to stand up to the work for which it is designed.

An aerodrome which has been prepared so that it is perfectly flat in all directions, and is also carefully drained, is an investment. Not only does the preparation of the surface ensure having no holes, large stones, or other obstructions which may, and so often in the past did, cause damage to the aircraft; but also that, due to the draining, whatever the weather, the aerodrome will never be unfit for use—a point which is naturally very important when the aerodrome in question is a commercial one.

The preparation of the surface does not stop at levelling and draining with meticulous care, but also entails treating to prevent dust or, as is usual in this country, growing a suitable type of grass on it. Hunter of Chester is probably the leading firm in this country carrying out this kind of work, and we were able to see the result of his work recently at the new Great West Aerodrome at Heathrow, belonging to the Fairey Aviation Co.

The occasion was a demonstration by Lloyds of their septuple gang Pennsylvania mower, which cuts a 16-in. swath. This mower is essentially the ordinary rotating-blade type of mower with seven units arranged in two rows so that each gang in the rear row slightly overlaps the track of the two preceding units, leaving a perfectly clean swath as a result. The outboard units are free to rotate in a vertical plane so that the mower may be run over very uneven ground and yet still do its job properly.

This mower was drawn by a six-cylinder Pennsylvania tractor, and the complete outfit made a luxurious machine which, in operation, fully lived up to the excellent performance its aspect engendered.

It was drawn at high speed across the aerodrome and, on a surface such as it had to deal with in this case, there was no difficulty in cutting the grass very short indeed. The nonchalant way in which this was done speaks volumes for the trust which the demonstrators put in the way the aerodrome surface had been prepared and freed from stones.

Actually the surface was more like a billiard table than a grass field, and a car was driven over it at 58 m.p.h. without experiencing the slightest bump.

The methods by which such a surface is obtained are many and varied, and further, they have to be altered to suit every type of soil dealt with, so that we cannot here give a detailed account of how this remarkable aerodrome is produced. Actually, Mr. Hunter, finding that he was unable to purchase suitable tools even from America, has designed the majority of his himself, and had them made for him, altering them as experience showed was desirable. We saw several different kinds of graders in use, also disc harrows and levellers, all being drawn by tractors of the caterpillar variety. Also there were other tools used for drawing out the ditches which are to be filled with clinker for drainage and for smaller mole drains which radiate from them.

Anyone who is interested in aerodrome construction should make a point of seeing Heathrow or Ratcliffe. Mr. Lindsay Everard's new aerodrome, which is being opened on September 6 with a meeting arranged by the Leicestershire Aero Club, as this latter is also the work of Mr. Hunter.

THE INTERNATIONAL TOURING COMPETITION

THE official figures have now been issued, and below we give a table showing the marks gained by each pilot in every different class.

It seems somewhat unfortunate that the organisers of the competition have not seen fit to issue the figures below in greater detail. Such, for instance, as those awarded for comfort and equipment. Last week we gave a table showing the marks which were obtainable for the different items, but these are all lumped together in the official list with the result that one has no idea why such totally dissimilar

machines as the Mono Special and the Junkers Juniors have both gained high marks in this particular class. It is understood that the makers of each machine will receive confidential reports of their own product so even they will be unable to compare their own machines with those of others. The fuel consumption, take-off, and landing tests all became more of a pilot's test than a test of the machines, which does not seem quite in keeping with the original idea of the competition. No doubt these and many other points will be modified in next year's contest.

The following is a list of the prizes won by the entrants of the aircraft and given by the Aero Clubs of Germany, France, Great Britain, Poland, Switzerland, Spain, Czechoslovakia.

	francs.
1. Deutsche Verkehrsfliegerschule G.m.b.H., Braunschweig	100,000
Also Mk. 1,500 from Verlags Ullstein as first in Category II.	
2. Luftdienst G.m.b.H., Berlin	50,000
Also Mk. 750 from Verlags Ullstein as second in Category II.	
3. Fr. Siebel Berlin (Mk. 25,000 for 3rd, Mk. 10,000 each for 10th and 20th)	45,000
Also Mk. 250 from Kathreiner G.m.b.H., Berlin, as fourth in Category I, and Mk. 500 from Verlags Ullstein as third in Category II.	
4. The Hon. F. Guest, D.C., D.S.O.	15,000
Also Mk. 1,500 from Siemens and Halske A.G. and Siemens Schuckert A.G. as first in Category I.	
5. Bayerische Flugzeugwerke A.G., Augsburg	10,000
Also Mk. 250 from Verlags Ullstein as fourth in Category II.	
6. Maxwell D. Trench	10,000
Also Mk. 750 from the Town Council of Frankfurt as second in Category I.	
7. Bayerische Flugzeugwerke (Mk. 10,000 each for 7th, 9th and 13th)	30,000
8. de Havilland Aircraft Co., England	10,000
Also Mk. 500 from the Continental Gummi-Werke, Hannover, as third in Category I.	
11. Luftdienst G.m.b.H.	10,000
12. Leichtflugzeugbau Klemm G.m.b.H., Bellingen	10,000
14. Jean Brocard and Jean R. Pierroz	10,000
15. Junkers Flugzeugwerke A.G. Dessau	10,000
16. Cirrus Aero Engines, Ltd.	10,000

17. Rene Caudron	10,000
18. Arado Handelsgesellschaft m.b.H., Berlin	10,000
19. Aeroklub Rzeczypospolitej Polskiej, Warszawa	10,000

The prizes won by the pilots were as follows:

HERR FRITZ MORZIK, a cup from the German President, a cup from the King of Spain, a bronze plaque from the German Government, a piece of handwoven Gobelin tapestry from the Austrian Ministry of Commerce, a cup from Luft Hansa A.G., a prize from the Bayerische Flugzeugwerke, a diploma of merit from the German Aeronautical Society, as winner of the whole competition. A gold medal from the French Aero Club, and a prize from Verlags Ullstein as first in category II.

HERR REINHOLD POSS, a gramophone from the Hugo Heine Propeller Works, as second in the whole competition, a silver medal from the French Aero Club and a trip from Bremen to Southampton and back by North German Lloyd as second in Category II.

HERR OSCAR NOTZ, a fruit dish from the Rhön-Rossitten Gesellschaft as the third in the whole competition.

MISS SPOONER, a prize from the Reichskredit Gesellschaft A.G. as fourth in the whole competition, a gold medal from the French Aero Club, and a silver cigarette box from Luft Hansa as first in Category I.

MR. JOHN CARBERRY, a silver medal from the French Aero Club, and a trip from Hamburg to Southampton and back by the Hamburg-Amerika Line as second in Category I.

MR. S. A. THORN, a piece of Sévres from the French Air Minister for the first to land at Paris, and 1,000 francs from the City of Pau as the third to land there.

MR. ALAN BUTLER, 2,500 francs from the City of Pau as the first to land there, 3,000 francs for the best time between Paris and Nimes, and 3,000 francs for the best time between Berlin and Nimes.

M. FINAT, 1,500 francs from the City of Pau as the second to land there.

CAPT H. BROAD, 1,000 francs for the second best time from Berlin to Nimes.

TABLE GIVING THE ALLOCATION OF MARKS

Competition No.	Pilot	Aircraft and Engine	Speed	Regularity	Comfort and Equipment	Dis-mantling	Engine Starting	Fuel Consumption	Take-off and Landing	Total	Final Position
B3	Morzik	B.F.W. M23c. ("Argus")	188	75	54	24	7	30	49	427	1
B8	Poss	Klemm L25c. ("Argus")	189	75	62	19	7	30	41	423	2
C1	Notz	Klemm L25c. ("Argus")	186	75	61	20	8	29	40	419	3
K8	Miss Spooner	Moth ("Gipsy II")	185	75	56	18	6	30	46	416	4
F2	Polte	B.F.W. M23c. ("Siemens")	187	75	56	23	2	25	41	409	5
K7	Carberry	Mono Special ("Warner")	193	75	74	0	5	30	28	405	6
C7	v. Massenbach	B.F.W. M23c. ("Argus")	191	65	55	23	8	26	30	398	7
K3	Broad	Moth ("Gipsy II")	195	75	56	18	4	27	20	395	8
E8	Kruger	B.F.W. M23c. ("Argus")	179	75	55	24	9	22	30	394	9
B9	Dinort	Klemm L25e. ("Argus")	185	65	61	20	7	30	17	385	10
B7	Osterkamp	Klemm L25a. ("Salmson")	151	75	52	13	11	30	52	384	11
C5	v. Köppen	B.F.W. M23c. ("Siemens")	178	75	56	24	2	27	21	383	12
A2	Lusser	Klemm L25e. ("Argus")	143	75	60	13	8	30	34	363	13
S1	Pierroz	Breda 15S. ("Walter")	163	75	65	16	6	26	11	362	14
A9	Risztics	Junkers Junior ("Genet")	151	75	67	13	0	30	19	355	15
K1	Thorn	Avian ("Hermes")	175	75	43	0	2	30	13	338	16
M2	Finat	Caudron 193 ("Renault")	139	75	64	11	6	30	12	337	17
C9	Peschke	Arado L 11a ("Argus")	132	75	64	15	3	29	18	336	18
P3	Plonczynski	R.W.D. 2. ("Salmson")	161	75	49	0	8	30	13	336	19
E6	Fr. Siebel	Klemm L 26 ("Siemens")	96	75	61	19	5	30	49	335	20
P4	Wjckowski	R.W.D. 2. ("Salmson")	159	75	49	0	10	30	6	329	21
D1	Dr. Pasewaldt	Arado L 11a ("Argus")	105	75	65	15	6	25	27	318	22
S2	Kolp	Klemm L25 ("Argus")	114	75	61	12	8	30	14	314	23
L3	Arrachart	Caudron 193 ("Renault")	123	75	64	10	6	22	11	311	24
C6	v. Waldau	B.F.W. M23c. ("Argus")	105	60	55	24	8	24	31	307	25
E1	Benz	Klemm ("Genet")	87	75	58	18	4	30	32	304	26
E2	Gothé	Junkers Junior ("Siemens")	114	75	68	12	1	23	1	294	27
C3	v. Freyberg	B.F.W. M23c. ("Argus")	93	60	55	24	3	11	27	273	28
A8	Roeder	Junkers Junior ("Genet")	75	75	69	21	0	30	1	271	29
T5	v. Habsb. Bourbon	Moth ("Gipsy I")	69	75	44	18	0	22	17	245	30
K6	Lady Bailey	Moth ("Gipsy I")	57	75	54	18	6	19	6	235	31
P2	Bajan	R.W.D. 4. ("Hermes")	60	60	62	0	5	30	6	223	32
O1	Gedgond	P.Z.L. 5 ("Gipsy I")	27	60	49	15	4	12	3	170	33
D8	Behning	B.F.W. M 23b. ("B.M.W.")	30	50	39	19	5	17	1	161	34
K4	Andrews	Arrow ("Gipsy II")	21	30	63	18	4	0	24	160	35

British Arctic Air Route Expedition

THE *Quest*, carrying the British Arctic Air Route Expedition, arrived at Angmagalik, Greenland, on July 26, and members of the expedition immediately prospected for a suitable base. This expedition has gone out to study the possibilities of an Europe-America air route via the Arctic.

Memorial to Miss Elsie Mackay

A MEMORIAL to Miss Elsie Mackay, daughter of Lord and Lady Inchcape, of Glanapp Castle, who lost her life while attempting a flight across the Atlantic with Mr. Hinchcliffe in 1928, was unveiled in Glanapp Parish Church, Ayrshire, on August 17.

AIR CONGRESS

THE Fifth International Air Congress will be held at The Hague, from September 1-6. Papers to be read are divided over five sections:—Scientific and technical problems; Air Traffic; Legal questions; Medical questions; and Air touring and sport flying.

Some of the outstanding papers of the Section of Air Traffic are:—

A. Plesman (Director of the K.L.M.), on "The Earning Power of Aeroplane-operating."

M. Wronsky (Director of the Deutsche Lufthansa), on "Co-operation of Air Transport and Ground Transport."

Col. Clarence M. Young, on "American Airway Practice."

Dr. W. Hampton and Capt. C. E. Ward, on "The Present-day Requirements for Aerodrome and Air Route Lighting."

On the same subject there are papers of Engineer P. van Braam van Vloten (Holland), and Dr. Fritz Born (Germany).

On the ground organisation of air transport and airport there will be papers by Freiherr von der Goltz (Germany), Maj. R. H. S. Mealing (England), and the Aeronautics Branch of U.S. Dept. of Commerce.

Problems of radio and navigation will be handled by A. Celloni and A. Marino (Italy), U. Guerra (Italy), the Marconi Wireless Telegraph Co., Ltd. (England), Dipl. Ing. W. Möller (Germany), F. Eisner (Germany), and the Aeronautics Branch of the U.S. Dept. of Commerce.

Finally, Capt. N. Macmillan (England) will read a paper on "Problems of Air Transport from the Pilots' Point of View."

For the Technical and Scientific Section will be read 50 papers which are divided into 11 groups: theory of aerodynamics; calculation of performances from aerodynamic data; experiences in flight on stability; spinning; airscrews; long-distance flights; seaplane floats and flying boats; calculation of resistance of wing constructions; compression ignition engines; light alloys; mixed problems. Some of the papers to be read are:—

Milton J. Thompson (England), "The effect of a hinged Flap on the Aerodynamic characteristics of an Airfoil."

A. P. Thurston (England), "The Thurston Rotor Thumb Control."

Dr. H. J. van der Maas (Holland), "Experiences concerning Longitudinal Stability of an Aeroplane and the Dimensions of the Horizontal Rudder."

R. Fukatsu (Tokio), "On the Equilibrium of Steady Spinning of Aeroplanes."

Chr. N. H. Lock (England), "Air-screw body Interference."

C. Koning and H. J. van der Maas, "Some Experiences with Townend Rings on Engine Nacelles."

R. K. Pierson (England), "Effect of Propeller Reduction Gearing on Aircraft Performances."

P. Franck (Paris), "Theoretical Study of the Automatic Mechanical Pilot."

R. J. Mitchell (England), "Experiments in a Model Tank as a Basis for the Design of Floats and Flying Boats."

N. G. Tchentzoff (Moscow), "Struts of Minimum Weight."

J. Podolsky (Moscow), "New Method of Calculating Spars."

C. Koning (Holland), "The Influence of the Ribs and the Covering on the Resistances of the Wing."

F. M. Green (England), "Construction of Aircraft in Steel."

A. H. R. Fedden, "Air-cooled Compression Ignition Engines."

A. Lehr (Paris), "On the Movement of Articulated Pistons."

P. Clerget (Paris), "The Evolution of the Heavy-oil Internal-combustion Engine."

K. L. Meissner (Germany), "Duralumin Alloys."

F. Haus (Belgium), "Fatigue Trials of Various Light Metals."

P. Brenner (Germany), "Corrosion and Corrosion Protection of Light Alloys."

E. F. Relf, "The Compressed Air-tunnel under Construction at the National Physical Laboratory."

Sir R. Glazebrook (England), "Aeronautical Research in England."

R. Giacomelli (Italy), "Leonardo da Vinci and his Aerological Study of Wind."

A. G. von Bauchauer (Holland), "The Cine Theodolite of the Aerodynamical Institution for Aeronautics of Amsterdam," and "Instruments for Resolving the Problems of Spheric Trigonometrics."

Furthermore, there are nine papers to be read for the legal section; 33 papers for the medical section; and 3 papers for the section of aerial touring and sport flying.

THE ARENS CONTROL

ON August 14 the Arens Control was officially placed before the public by a small reception at Heston.

Among those who sponsored it were Mr. Montague, our Under-Secretary of State for Air, and Lord Strickland, the Prime Minister of Malta. A Puss Moth owned by Mr. Freeman, who markets the Arens Control in this country, was shown, and many people were taken for flights during the afternoon.

This machine has been fitted throughout with this form of control, and it certainly makes a very neat job of it. The rudder control is a single length of the control instead of the complication of double wires with their attendant pulleys and brackets. The elevators are fitted in the same fashion to a central lever on the spar.

The control itself is a rigid casing through which runs a cable round which is wound a fully compressed spring. The cable finishes at each end in a smaller tube which can slide inside the casing. Thus, the cable can be both pushed or pulled through the casing, the cable taking the tension and the spring the compression. The casing is packed with thin graphite grease which is retained between the coils of the spring, so that the control is self-lubricating and remains so indefinitely.

Irish Air Taxis

MR. HUGH CAHILL, who is starting an air taxi service in Ireland, has so far met with rather hard luck. The delivery of the first Desoutter monoplane was expected some time ago, but owing to some hitch has been delayed. He succeeded in borrowing a machine to get the service under way, but while it was being flown to Ireland it crashed in Cumberland. Luckily nobody was injured. Mr. Cahill is determined not to let these little difficulties interfere with his project and intends, if necessary, to purchase a "Puss" Moth. He has already a Gipsy-Moth, G-ABBV, for the flying school which is to be run in conjunction with a club and the taxi service. This machine has been giving joy rides at a small seaside resort in County Dublin, and

This external casing can be bent to any required shape, and therefore, by virtue of its ability to transmit both push and pull round corners, replaces bell-crank levers or pulleys. Its construction lends itself to any metal, and the casing can be duralumin, aluminium, steel or whatever is required, and the internal spring can be chromium or cadmium-plated, if required for seaplane work.

Being absolutely positive, the control has the advantage that slackness cannot develop in the control itself, a point which becomes very important when dealing with such things as aileron controls.

In aircraft there is very little which cannot be operated by this form of control—such things as tail-trimming gear, ailerons, rudder, elevators, brakes, all engine controls, fuel cocks, and even for very light remote controls such as wireless gear.

A wrapped head has been designed which neatly converts the reciprocating motion of the control to rotary motion when required, and this can be used, for instance, directly on the rudder-bar pivot and the base of the rudder post, thus making a very neat form of rudder control.

The Arens Control is being handled by Arens Control, Ltd., Dorland House, 14, Regent Street, London, S.W.1.

has proved a great success. Mr. Cahill is of the opinion that the Free State Government will be more likely to assist civil aviation when they see a service in operation, rather than "on paper."

Sir Alan Cobham's Irish Tour

SIR ALAN COBHAM, in a letter addressed to the Killarney Urban District Council, states that he intends to make a propaganda tour of Ireland shortly to create public interest in civil aviation there. He advises that in view of the network of high-tension lines which are being put up all over the Free State, municipal authorities should reserve spacious fields close to the towns for future development as aerodromes, before the cables are erected.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

REPORT of Meeting of the Committee of the Royal Aero Club, held at 3, Clifford Street, London, W.1, on Wednesday, July 30, 1930, at 5 p.m.

Present:—The Right Hon. Sir Philip A. G. D. Sassoon, Bart., P.C., G.B.E., C.M.G., M.P., in the Chair; Griffith Brewer; Lieut.-Col. M. O. Darby, O.B.E.; Major Alan R. Goodfellow; Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S.; Col. F. Lindsay Lloyd, C.M.G., C.B.E.; John Lord; Lieut.-Col. Sir Francis K. McClean, A.F.C.; Lieut.-Col. J. T. C. Moore-Brabazon, M.C.; Lieut.-Col. M. O'Gorman, C.B.; F. Handley Page, C.B.E.; Major H. A. Petre, D.S.O., M.C.; T. O. M. Sopwith, C.B.E.; Harold E. Perrin, Secretary.

Election of Members.—The following new Members were elected:—

Sqdn.-Ldr. L. M. Bailey, Flying Officer H. Buckingham, M. G. W. Burton, E. R. Desoutter, Lieut.-Col. A. Hamilton Gault, D.S.O., M.P., T. W. Hay, Frank Lemon, A. B. Maconochie, J. K. Mathew, G. Rose, G. F. Surtees, Stephen Wilkinson, Lady Hay Drummond-Hay, Georges Hanet.

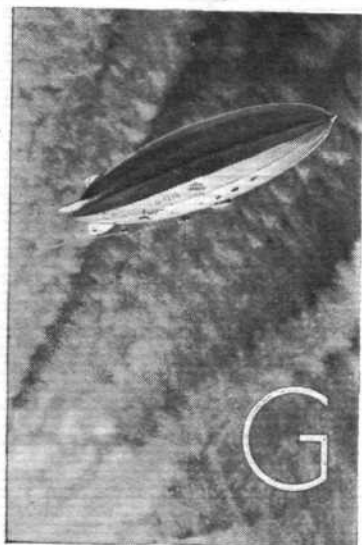
Aviators' Certificates.—The following Aviators' Certificates were granted:—

9203	Francis George Bowles ..	Brooklands Fl. School.
9204	William P. L. Russell ..	Lancashire Ae.C.
9205	Geoffrey Whitley Garnett ..	Yorkshire Ae.C. (N.F.S.)
9206	James Graham Gould ..	Cinque Ports Fl. C.
9207	Frederick Cuthbert Wiltshaw	Lancashire Ae.C.
9208	James Wentworth-Fitzwilliam	Hanworth C. (N.F.S.).
9209	Hugh Whittall Marlow ..	London Ae.C.
9210	Hugh Robertson Black ..	Royal Air Force.
9211	Geoffrey Martin Pennefather	Hanworth C. (N.F.S.).
9212	Anthony Graham Head ..	Southern Ae.C.
9213	Hubert Ernest Allerton ..	Lancashire Ae.C.
9214	Philip Walter Marriage ..	Cinque Ports Fl. C.
9215	Eric Donald Redgment ..	Norfolk & Norwich Ae.C.
9216	Otho Leslie Prior-Palmer ..	Yorkshire Ae.C. (N.F.S.)
9217	Eric Randolph Crundall ..	Airwork Fl. School.
9218	Andrew Cecil Woods ..	Cinque Ports Fl. C.
9219	David Kinghorn ..	Scottish Fl. C.
9220	Albert William Fairlie ..	London Ae.C.
9221	Gordon John Grindell ..	Hanworth C. (N.F.S.).
9222	Enid Merlin Gordon Gallien	Hanworth C. (N.F.S.).
9223	Lloyd George Wise ..	Surrey Fl. Services.
9224	Ernest Clifford Merrick ..	Midland Ae.C.
9225	Leslie Meldrum Emsley Lea	Hanworth C. (N.F.S.).
9226	Ernest Charles Harvey ..	Norfolk & Norwich Ae.C.
9227	John F. Fortescue Finnis ..	De Havilland Fl. School.
9228	Edward St. Maur Brett ..	"A" Licence.
9229	David Geoffrey Williams ..	Airwork Fl. School.
9230	Mervyn Aleck ap Rhys Pryce	Airwork Fl. School.
9231	Peter Goodwin Newton ..	Home Counties Acft. Services.
9232	Jack Mulholland ..	De Havilland Fl. School.
9233	Frank Gordon Evans ..	Hanworth C. (N.F.S.).
9234	Angus C. S. Irwin ..	—
9235	Adelin F. van Outryve Ydewalle ..	Cinque Ports Fl. C.
9236	Joseph Wright ..	Midland Ae.C.
9237	Joanna Elder Giles ..	Cinque Ports Fl. C.
9238	Harold Anthony Shadforth	Cinque Ports Fl. C.
9239	Alexander Ormerod Russell	Lancashire Ae.C.
9240	Geoffrey Shaw ..	Newcastle Ae.C.
9241	Andrew Skeen Carr ..	Newcastle Ae.C.
9242	Albert Braid ..	Lancashire Ae.C.
9243	James Keith Gillett ..	Lancashire Ae.C.
9244	John Hunter Leask ..	Lancashire Ae.C.
9245	Griffith Brewer ..	Hanworth C. (N.F.S.).
9246	John Guthrie Ward ..	London Ae.C.
9247	Alistair Monteith Gibb ..	Airwork Fl. School.
9248	Norman Harrison Bailey ..	Norfolk & Norwich Ae.C.
9249	Eric Surrey Dane ..	Lancashire Ae.C.
9250	Muriel Robinson ..	Nottingham Ae.C. (N.F.S.).
9251	James Cornelius Malone ..	Cinque Ports Fl. C.
9252	Edward Duncan Crundall ..	Cinque Ports Fl. C.

9253	Alfred Joseph Green ..	Norfolk & Norwich Ae.C.
9254	Archer F. L. Clive ..	Airwork Fl. School.
9255	William Welcher Tolman ..	Norfolk & Norwich Ae.C.
9256	Gifford Hallam ..	Lancashire Ae.C.
9257	Joseph Fearnough ..	Lancashire Ae.C.
9258	Robert James Bevington ..	London Ae.C.
9259	Charles Ralph Hodgson ..	Lancashire Ae.C.
9260	Charles Neville Colson ..	Southern Ae.C.
9261	Guy Clyne-Forsyth ..	Scottish Fl. C.
9262	John E. Johnston-Noad ..	London Ae.C.
9263	Charles Compere Job ..	Brooklands Fl. School.
9264	Mary Katherine Balniel ..	Airwork Fl. School.
9265	Edward R. S. Johnston ..	Newcastle Ae.C.
9266	Lord Willoughby de Broke	Northampton Ae.C.
9267	William Wightman McCombe	Scottish Fl. C.
9268	Thomas Miles Henslow ..	Brooklands Fl. School.
9269	Ronald Shaw Adams ..	Newcastle Ae.C.
9270	Walter Harmer ..	Midland Ae.C.
9271	Leslie Winwood Farrer ..	Midland Ae.C.
9272	Jacob Kennedy Schwarrootz	Hanworth C. (N.F.S.).
9273	Gerald Salter ..	Liverpool & Dist. Ae.C.
9274	Frank Earnshaw ..	Nottingham Ae.C. (N.F.S.).
9275	Charles William Wollaston	Phillips & Powis Fl. School.
9276	Cyril A. N. Bishop ..	Phillips & Powis Fl. School.
9277	Kenneth Entwisle Bury ..	Phillips & Powis Fl. School.
9278	Bruce Ramsay Cowper ..	Scottish Fl. C.
9279	Herbert Henry Dowsett ..	Phillips & Powis Fl. School.
9280	Sydney Frank Terry ..	Berks, Bucks & Oxon Ae.C. (N.F.S.).
9281	Charles Thomas Davis ..	Midland Ae.C.
9282	Ronald Ernest Nightingale	Cinque Ports Fl. C.
9283	Harold Day Coleman ..	Midland Ae.C.
9284	Winifred Joyce Drinkwater	Scottish Fl. C.
9285	Victor Cyril Gronfell ..	Hanworth Cl. (N.F.S.).
9286	John Boys Ponder ..	Marshall's Fl. School.
9287	Frank Pilkington Scott ..	Lancashire Ae.C.
9288	George Heath Compton ..	Surrey Fl. Services.
9289	Ralph Leigh Hare ..	Norfolk & Norwich Ae.C.
9290	Dorothy Blanche Gault ..	De Havilland Fl. S.
9291	William James Martin ..	Home Counties Acft. Services.
9292	Stephen Holmes Isherwood	Newcastle Ae.C.
9293	Harold George Wigg ..	Suffolk & Eastern Counties Ae.C.
9294	Kenneth Templeton ..	Scottish Fl. C.
9295	Norman Keith Worters ..	Newcastle Ae.C.
9296	Philip Kay Stead ..	Yorkshire Ae.C. (N.F.S.)
9297	Walter Lancaster Hey ..	Yorkshire Ae.C. (N.F.S.)
9298	James Rush ..	Newcastle Ae.C.
9299	Marcuswell Maxwell ..	Hanworth C. (N.F.S.).
9300	Edward St. Aubyn ..	Cinque Ports Fl. C.
9301	Leonard V. S. Mann ..	Midland Ae.C.
9302	Edward D. A. Bigg ..	Phillips & Powis Fl. School.
9303	Arthur E. F. Fawcus ..	Hanworth C. (N.F.S.).
9304	Stewart Gordon Knock ..	Hanworth Cl. (N.F.S.).
9305	Hon. Mildred Mary Bruce ..	Brooklands Fl. School.
9306	Charles Maclean Outram ..	Berks, Bucks & Oxon Ae.C. (N.F.S.).
9307	Albert J. B. McIntyre ..	Newcastle Ae.C.
9308	Albert Johnson Thomson ..	Bristol & Wessex Ae.C.
9309	John Noel Armstrong ..	Yorkshire Ae.C. (N.F.S.)

Schneider Contest, 1931.—In reply to inquiries, the Royal Aero Club announces that it has only returned entries that have not conformed to the unalterable conditions governing the Schneider Contest, 1931, issued by the Fédération Aéronautique Internationale in January, 1930. There is no foundation for any suggestion that the Royal Aero Club declines to organise the Schneider Contest, 1931.

Offices: THE ROYAL AERO CLUB
3, CLIFFORD STREET, LONDON, W.1.
H. E. PERRIN Secretary



AIRSHIPS

RETURN OF R 100

THE GREAT and general was the satisfaction when R 100 appeared over Bedford at 10.30 a.m. on Saturday, August 16. On the night before the messages from the airship had been reaching the Air Ministry very late, and it was impossible to form any clear idea of the hour at which she might be expected. However, at 10.30 she appeared with the sun shining on her fabric and a bright blue sky to make an effective background for her. At 11.33 her main cable was connected with the cable from the tower, and exactly half an hour later her "dewdrop" was locked home to the mooring cone at the head of the tower. Half an hour is not a long time in which to bring an Atlantic liner up to her quayside. The manœuvre was very skilfully executed by the captain, who kept his five available engines running until the main cables had been connected, and continued to equalise his forward air speed with that of the head wind until the nose was made fast. The starboard forward engine was out of action with damaged reduction gear.

Lord Thomson of Cardington, Secretary of State for Air, welcomed the officers and men of the airship, and his presence and his cheering words compensated for the absence of great crowds to welcome R 100 home from her great flight. Addressing Wing Commander Colmore, Lord Thomson said:—

"I welcome you home from Canada and congratulate you on having accomplished this first stage in the development of British airships, whose contribution to our Imperial air communications must be of incalculable significance. You may look forward with quiet confidence to the successful completion of the great experiment with which you have been charged by His Majesty's Government. I wish to convey through you my heartiest congratulations to Sqdn.-Ldr. Booth for his excellent handling of the airship and to all the officers and crew for the magnificent work they have done in circumstances which have provided a searching test not only of their efficiency, but also of the sound construction of R 100. You have lived up to your great reputation and can look back on this day with satisfaction for the remainder of your lives. I wish also to express my high appreciation of the work of all who have been responsible for the design and construction of R 100 and to pay a special tribute to the officers and staff in charge of the ground organisation, which has worked perfectly throughout the flight."

As the crew left the tower, the first crying need was for a smoke. R 100 has petrol engines, and so smoking cannot be allowed on board. R 101, with her heavy-oil engines and regular smoking room, will be a more popular ship with passengers. But all looked forward also to a hot meal. The last one they had enjoyed had been dinner on the previous Thursday evening. After that, water had got in through the fabric, possibly near the outlet trunks of gas valves, and had put the electric cooker out of action. Since then only cold food, such as bully beef, had been available. No tea or coffee was forthcoming. The supply of beer had run short, and there was a choice of whisky and lemon squash to drink. Major Scott also confessed that he was looking forward to a bath. Still, the absence of a bath on an airship is not the hardship which it is on a long journey in a Continental train, for the air up above is clean.

For the moment, however, a smoke was the only solace allowed to Wing Commander Colmore, Major Scott and, Squadron Leader Booth. First of all, the Director of Airship Development had to broadcast. In the course of his remarks, he said:—

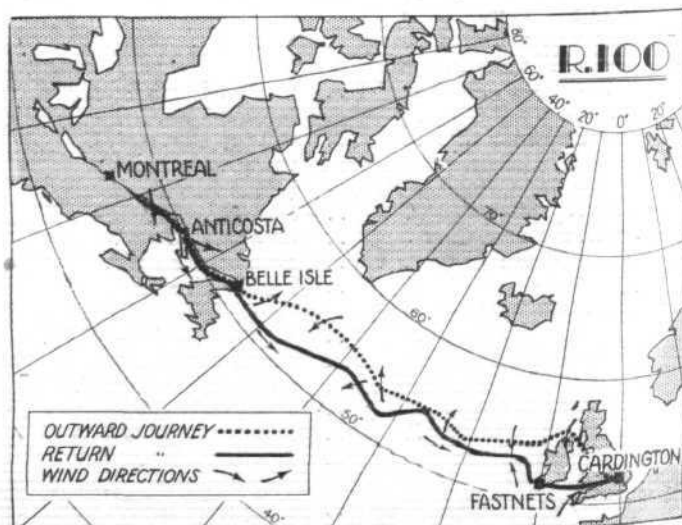
"This was the first British Empire flight carried out by an airship.

"The flight to St. Hubert took 79 hours, and was completely without incident until within 50 miles of Quebec, when we experienced rather bad conditions. The trip up the St. Lawrence and view of Montreal at night was really wonderful. Twelve Canadian officials accompanied us on the flight to Toronto and Ottawa. The course was set first for Ottawa and then direct to Toronto, which was reached at 3 a.m., but as we were not due until 9.30 a.m., we went across to Hamilton and viewed the Niagara Falls. We then flew over Lake Ontario and back to Montreal—about 1,000 miles. We remained at St. Hubert tower nearly a fortnight, and had fairly good weather, but one bad storm over the airport while we were moored there, but we had no difficulty in handling the ship.

"We left Montreal at 9.30 p.m. local time last Wednesday. Made quick passage down the river and were out in Atlantic 14 hours later. The trip home occupied just over 57 hours, and was again quite uneventful. We passed through bad weather last Thursday night, which delayed us somewhat. We obtained reliable weather information throughout the flights, but for regular services organisation will have to be developed. It is absolutely essential, if fast voyages are to be made over the Atlantic, to be fully and constantly informed of the weather ahead. We have made progress during the last few years. With extensive meteorological and W.T. organisation I think airships will compare favourably with ship ocean passages. I am sure that for comfort you will not beat the airship—the passengers will vouch for this. We shall require larger airships to operate this route regularly. R 100 and R 101 are quite strong enough, and I do not think we shall want very much higher speed. It is necessary, however, to maintain a higher cruising speed throughout the journey, and it is for this reason that in my opinion larger airships are necessary for this route. I would like to leave the impression in your minds that flying the Atlantic in an airship is the most comfortable way of crossing that ocean. Life may be boring, but the smoothness of the airship will more than compensate for the lack of amusement. Also, I am sure that time will prove that this method of transport is just as safe as any other form of transport."

Then the three gave an interview to the press. They were agreed that better meteorological information was necessary when navigating the Atlantic. Squadron-Leader Booth, denying the rumour that they had ever been out of wireless touch with land, said that they were in too much touch. For future flights he held that there should be a separate wireless outfit for press correspondents. They must not use the navigating wireless. Wing-Commander Colmore admitted that the whole question of fabric on airships would have to be gone into. He denied a report to the effect that he had stated in Canada that the system used on R 100 of supporting the fabric on the hull by drawing it in with tapes and wires had proved unsatisfactory. But, two months ago, before R 100 started, they had come to the conclusion that the new system of doping the fabric before it was put in place had not been a success. It had been an experiment which they had hoped would be an improvement, and they had been disappointed. They would revert to the old system of fixing the fabric on the hull first, and then doping it, though not necessarily using the spray doping method. There had been damage to the fabric on three of the fins, only the lower vertical one having escaped. The patches which we could see on both the horizontal fins had had to be left undoped on the outside, but they were doped internally.

Major Scott gave a vivid account of the storm over the St. Lawrence on the outward journey, which was the most important incident of the whole trip. He said that the reports which had been published in some papers had been much exaggerated. In particular the report that the airship had pitched to 45 degrees was quite incorrect. He said that they were flying at 1,200 ft. when they went into a thunderstorm with strong vertical currents. They rose rapidly to 3,000 ft. The nose was put down to try to prevent the



ship from rising. Then she came down again for several hundred feet, and this increased the angle of pitch by a few degrees, but it never exceeded 20 to 25 degrees. Then she rose again to 4,000, and then sank again, and was once more under control. He could not say exactly how long the whole incident took. It was very hard, he said, to estimate time when one was thinking and acting quickly; but it must all have been over in about four minutes. The motions of the airship were rapid but not violent. No one was thrown about. Lunch had just been laid and the things were spilt on the floor, and a certain amount of crockery was broken. That, except for the damage to the fin, was the worst harm done.

When asked about how this flight struck him, as compared with his flight in R.34, Major Scott said promptly that his chief impression was how easy this last flight was. He certainly hoped to make other Atlantic crossings in airships.

The passengers said that their chief impression was the smoothness of the run to England. One said that he had done a lot of typing on board, as R.100 was quite the steadiest conveyance in which he had ever travelled. They told stories about being taken round the ship, up on the top beside the upper vertical fin, and down through space into the engine cars. The coolness with which the crew walked and climbed about the structure, inside or outside, had struck them very much. They had slept well in the bunks in sleeping bags, and they had not at any time been too cold. In fact, all accounts go to show that for restful travel an airship cannot be surpassed.

While R.100 was being refuelled at the tower a spider attachment supporting some fuel tanks in the fore part of the ship gave way and the tanks fell, tearing the fabric. They were hoisted into position again, and the ship was moved from the tower into her shed.

The members of the relief watch who went to Canada by steamship all returned as part of the crew. Those substituted are returning by steamship under the charge of Sqdn.-Ldr. A. H. Wann. They are:—

Riggers G. G. Cutts, C. Flatters, C. H. Rumsby, F. Williams, Chargehand engineer A. F. Stupple. Engineers R. Ball, D. Lelliott, H. Millward, J. M. Sturgeon.

Lieut.-Comm. Sir C. Dennistoun Burney and Mr. N. S. Norway of the constructing firm, Group-Capt. Stedman, O.B.E. (R.C.A.F.), Chief Aeronautical Engineer, Department of National Defence, Canada, and Wing Commander Hon. L. J. E. Twistleton-Wykeham-Fiennes, R.A.F., Air Attaché, Washington were also on board.



Home once more. The ship's gangway down at Cardington.

The following is the official log of the return flight of R.100 from Canada, which has been written by Wing Commander R. B. B. Colmore, O.B.E., the Director of Airship Development.

August 13.—The ship slipped at 9.30 p.m. local time (1.30 a.m. G.M.T.), from the St. Hubert mooring tower, having on board 9,585 gallons of fuel, 6.3 tons of ballast, 1.5 tons of drinking water, and 56 persons, including 13 passengers, nine of whom are representatives of British and Canadian newspapers.

We have the following letters for delivery: From the Prime Minister of Canada to the Prime Minister. From the Prime Minister of Canada to the Secretary of State for Air. From the Ministry of Defence to the Secretary of State for Air. From the High Commissioners' Office to the Secretary of State for the Dominions. From the Mayor of Montreal to the Lord Mayor of London; and we are also carrying a box of cut flowers for Buckingham Palace, and a case of peaches from the St. Catherine's Flying Club, Ontario, for the Prince of Wales.

The airship made a splendid get-away, and after passing over the City of Montreal, shaped a course down the St. Lawrence. Quebec was passed at 11.45 p.m. local time.

The progress of the ship over the St. Lawrence was entirely uneventful, the speed made good was between 75 and 80 m.p.h., with only three engines running, favourable winds making this possible.

At midnight local time the ship's position was at the south-west end of Green Island, having covered nearly 190 miles in 2½ hours.

August 14.—Father Point was passed at 2.5 a.m.—favourable winds continued, and Belle Isle was abeam. At noon, the weather being fair, clear sky, no cloud. We have covered the first 850 miles of the trip in 13½ hours.

The westerly winds began to drop very rapidly as we got out into the Atlantic, and after a period of light winds, at about 2 p.m. a strong head wind was encountered from the north-east, associated with a depression which had approached from the south-west. By altering course so as to move for a time in a south-easterly direction, the maximum adverse effect of this unfavourable wind was avoided, and later in the evening we found ourselves in the belt of favourable winds on the south side of the depression.

August 15.—Heavy rain and low cloud was encountered during the passage through the depression, and we were steaming about 5 hours at 60 m.p.h. air speed, but making good only about 25 m.p.h. About 7 tons of ballast water was collected.

While passing through the heavy rain the ship was soaked and a certain amount of water found its way inboard—owing to this the electrical cooking apparatus was temporarily disabled; outer covers still require improvement.

At about 1 p.m. local time (the wind at the time being from the south) it was decided to lay course to approach the north of Ireland, rather than the south as had been the first intention. We obtained immediate benefit, the wind lying on our starboard quarter, and we shall encounter westerly winds as we near the Irish Coast.

At 7 p.m. local time, altered course towards the coast of Ireland, we expect to cross the Galway Coast between 2 and 3 a.m. G.M.T. (about midnight local time) now making good 70 knots.

During the night we received a report from Cardington that south-westerly winds might be expected, we therefore decided to shape course for the Fastnets and proceed to our base via Lundy Island.

August 16.—At 3 a.m. G.M.T. sighted the Fastnets, Johnston has again made a good landfall. Lundy Island was sighted at 6.45 G.M.T., passed Barry and Cardiff about 7.45, sighted Bristol and Cirencester. Sighted Cardington sheds at 9.47 G.M.T. Dropped main wire at 10.35 G.M.T. Time in air 57 hrs. 5 mins. Fuel remaining, 3,200 gallons.



Lord Thomson congratulating the officers and crew of R 100 at the base of the tower. On the Air Minister's right hand is Wing Comdr. Colmore in mufti, and on his left Maj. Scott, next to whom is Sqdn.-Ldr. Booth.

R 101

R 101 should soon be ready to emerge from her shed. Her gross lift will then be 172 tons. One starting engine, which runs on heavy oil instead of petrol, has been received

from the Beardmore firm, and if it proves a success it may be possible to have no petrol at all, even in the engine cars. It is hoped that it will soon be possible to reverse one or two of the main engines.

PRIVATE FLYING AND CLUB NEWS

THE SHANKLIN MEETING

THOSE of the public who had the sense to come to the flying meeting arranged by the Isle of Wight Flying Club at Shanklin on Sunday, August 17, certainly got their money's worth and to all appearances were more than satisfied.

They came in thousands, until one marvelled that there were so many in the neighbourhood. We believe that about 8,000 paid for admission, and we cannot help thinking that even the indigenes must have ceased fleeing holiday-makers and come along to see what aircraft were.

Making money out of visitors is, of course, one of the higher trades nowadays, and as such its devotees make less money out of it than they used to do, also the visitors are harder to please, but the Isle of Wight Flying Club knew what they were about when they decided to provide an afternoon's flying display as an attraction, and since they knew their job they reaped their just reward.

Actually they showed even more sense than the public knew, as they persuaded both Mr. Jeffs, who as usual was in attendance looking after the aerial safety, and Mr. McClure, the A.A. aviation representative, jointly to take over the organisation of the flying part of the meeting. The result justified their choice, and we heartily recommend any small club to try and get these two gentlemen to act for them in order to make this part of their meetings successful. Another who contributed in no uncertain manner to the enjoyment of the public was Mr. E. C. Brown, the aviation manager of W. B. Dick and Co., the Ilo Oil people. He was prevailed upon to do the announcing, and though this was believed to be his maiden effort he fulfilled the duty, as to the manner born. His lucid explanations of all that happened, interspersed with light anecdotes and details of the pilots and their machines, was exactly what was wanted. Mr. Brown was in the R.A.F. and has a very large flying experience so that

he was well qualified to explain things, added to which his delivery was the clearest we have heard, in spite of the fact that the loud speakers were of the tin trumpet variety. The general arrangements for the public were admirably made and a good view of the flying was obtainable from all the enclosures. The A.A. looked after the machine park in their usual efficient manner and were always on hand to start up engines and otherwise assist.

The programme opened with a fly past and parade of some of the many machines present. Actually about 30 visiting aircraft arrived and gave the islanders quite a good idea of the size to which the private flying movement has now grown. Mr. Tommy Rose led the fly-past in a Sports Avian (Hermes), both he and Mr. Handstock who came in his Widgeon (Gipsy) are the aviation representatives for Pratts; following him came Mr. Piercy in the Puss Moth belonging to Mr. Freeman, who markets the Arens control; Mr. Brett, a French representative of D.H.'s in a Moth; Mr. Talbot Lehmann in a Widgeon (Cirrus III); Mr. Olley flying the Robinson Redwing (Hornet); Mr. Rogers in a Klemm (Cirrus III); and Mrs. Victor Bruce in her Bluebird (Gipsy II). After the fly-past Mr. Bentley, in the Shell Company's Moth (Hermes), gave an exhibition of crazy flying. He skidded about the aerodrome flying sideways and, in fact, all ways except the normal way, and showed what liberties a skilled pilot can take when he knows how far he can go.

The next event was a race which was run on a course that led the competitors round Shanklin, Sandown and back to the aerodrome. The entrants were Mr. Malcolm, Moth (Gipsy I); Mr. Napier, Widgeon (Gipsy I); Mr. Brett, Moth (Gipsy I); and Capt. Stack, Moth (Hermes). It was a handicap race starting in that order and though the ranks closed slightly, they finished in the same order, making Mr. Malcolm the winner. With pleasing promptitude the



An Aerial View of an Australian Air Meeting. It looks as if light aircraft are as much in use there as they are in England.

prize was taken straight out to him on the aerodrome, and when it had been poured out it was consumed with gusto!

Flight—Admiral Nevamis had, according to the programme, been engaged to give an exhibition of shooting for the next event, and he was flown past the target from which were suspended some bottles. The accuracy of his aim, so accurate in fact that the bottles broke almost before the shot was fired, led us to suspect that our friend from Norwich had come again. On investigation we found this to be so, although he had made valiant efforts to disguise himself in a pull-over of vivid hue. It was rumoured that he had expressed the wish to take a companion out with him in his "target," but this was vehemently denied later. Capt. Stack, in the Moth (Hermes) of Smiths Instruments, took up the gallant Admiral, and his perfect placing of the machine no doubt helped the "shooting" considerably. Many averred that Mr. John Lord claimed relationship with Admiral Nevamis, and it seems very reasonable to connect such prowess with the brains of the Lord family.

Mr. Murray then put up one of the finest aerobatic shows that we are likely to see. His Moth is fitted with special tanks which permit him flying inverted, and he seems to prefer this position for the majority of his manœuvres. His polished display was, in the opinion of many competent to judge, up to the highest C.F.S. standards, and it reflects the greatest credit on the Brooklands School of Flying where he was trained. Mr. Murray went to them as a young pupil, and his flying certainly disproves the theory held for so long that civil trained pilots cannot equal those from the Service. Capt. Stack who next took up his Moth, then gave an entirely different type of aerobatic display. He makes a speciality of flick rolls and tight loops from the top of a prolonged zoom, up which his Hermes engine carried him at great speed. He also showed how controllable the Moth is by flying at speed across



Mr. Robert McAlpine, who has followed the example of many business people and come into aviation; here seen with his daughter, at the Gatwick Aerodrome.

thus setting an example which was soon followed by the others.

Mr. John Trantum was then taken up by Mr. Rose in a Bluebird, and was served scurvily by the wind which changed its direction at the height from which he jumped for his parachute drop, with the result that he was unable to land in the aerodrome but arrived safely in a field on the side. He informs us that the Russell Lobe parachute which he used is now fully approved by the Air Ministry and has been tested by them.

A balloon bursting competition was the last item on the programme. Bunches of balloons were let up, and Messrs. Brown, Bentley, Rose and Dick were the contestants who endeavoured to break up the whole of their respective bunches. The first two named were successful in doing so and shared the prize. The air above the aerodrome was somewhat tricky and the balloons went in different directions, making this event very difficult.



A typical assortment of light aircraft, mostly privately-owned, as seen at one of our flying meetings.
(FLIGHT Photo.)

ASSOCIATED Light Aeroplane Clubs' General Council.—A meeting of the General Council was held at the R.Ae.C. on Thursday, August 14. Those present were:—Col. Sir Joseph Reed (Newcastle Ae.C.), in the Chair; Bristol and Wessex Ae.C. (A. H. Downes-Shaw, Captain L. P. Winters); Hampshire Ae.C. (H. J. Harrington, Graham Gibbs); Hanworth Park (Lt.-Col. I. A. E. Edwards, G. E. F. Boyes); Lancashire Ae.C. (Maj. A. R. Goodfellow); Liverpool and District Ae.C. (W. F. Davison); Leicestershire Ae.C. (R. C. Winn); London Ae.C. (Maj. K. M. Beaumont); Midland Ae.C. (Maj. G. Dennison); Newcastle Ae.C. (B. M. Dodds); Suffolk and Eastern Counties Ae.C. (C. M. Prentice); in attendance, H. E. Perrin (Sec.), and B. Stevenson (Asst. Sec.).

AIR MINISTRY SUBSIDY AGREEMENT.—The General Council considered the draft of the new subsidy agreement and drew up its recommendations.

The Council afterwards attended a Conference at the Air Ministry, Gwydyr House, Whitehall, under the Chairmanship of Mr. F. G. L. Bertram, the D.D.C.A., at which the Agreement and the recommendations of the General Council were fully discussed.

GROUP INSURANCE.—The question of a group insurance amongst all the associated light aeroplane clubs was discussed, and it was decided that the insurance statistics for the last two years should be collected with a view to preparing a scheme for the consideration of the General Council.

S.B.A.C. Challenge Cup.—The race for the S.B.A.C. Cup and prizes of £75, postponed from the Bristol Meeting, will be held at Ratcliffe, Leicestershire, on September 6, on the occasion of the official opening of the private aerodrome of Mr. W. Lindsay Everard, M.P., the President of the Leicestershire Ae.C. The race is open to recognised light aeroplane clubs, and the pilots must have been trained *ab initio* by the clubs.

The organisation is in the hands of the Leicestershire Ae.C.

THE MONTREAL Light Aeroplane Club.—The second annual Canadian Air Meet, sponsored by the Montreal Light Aeroplane Club, will be held at St. Hubert, on September 6 and 7.

Last year's pageant was an enormous success, and some 30,000 to 40,000 people came to the airport. Cash prizes will be offered far in excess of last year's sum.

THE Surrey Aero Club is one of the latest clubs to be formed. Mr. Waters, who is at present acting as Secretary, has formed the Club at his Gatwick Aerodrome, and already some 30 members have joined. On the previous page we show Mr. Robert McAlpine and his daughter, taken on the occasion of the unofficial opening of the club. The aerodrome is situated at the southern end of the racecourse.

An unconventional view of a Puss-Moth. There is little doubt as to how it got its name if it is seen like this. (FLIGHT Photo.)

LIGHT AEROPLANES IN FRANCE.—A hundred light aeroplanes have been bought by clubs and private owners since the Air Ministry announced on April 20 that it would contribute towards the purchase price and running expenses of privately-owned machines. Sixty-eight have been bought by individuals and 32 by clubs.

THE Aero Club, Windsor, is said to be in process of formation at Bishop's Farm, an historic thirteenth-century mansion at Oakley Green, Windsor. The farm has been purchased by a syndicate to establish an aero club and flying school. They have bought the famous oak panellings, valuable furniture, and fittings of the mansion, and the development of the estate for flying will be proceeded with immediately, while grounds will be laid out for polo, cricket, bowls, and tennis. A covered tennis court will also be erected.



CROYDON WEEKLY NOTES

THE most interesting news item at Croydon this week centres round Mr. J. J. Flynn. He is one of the most modest of good fellows and whilst others strut into the glare of publicity he retires, knowing that it is the doing of a job which matters, not the talking about it. It is six months since he joined Imperial Airways and after the usual probationary period as second pilot and a spell on inland services he "passed out" on "Argosys" last Wednesday. The following morning he took out the 8 a.m. service to Paris and did the trip in 96 min., an extraordinarily good time for this type of machine. We understand that it is two years since Capt. Willcockson did the journey in 105 min., the next best time. "Paddy" Flynn has had an adventurous career and many have made themselves into newspaper heroes by achieving much less. His first appearance at Croydon was as a joyride pilot for Surrey Flying Services in 1924. But it seems that that was only because the shouting and fighting in his native land had died down. For after his war service with R.F.C. and R.A.F. in France, he returned to Ireland in 1920 as second in command of the Free State Air Force with the rank of Commandant. He left Surrey Flying Services when N.F.S. started up last year, but saw more chances with the Desoutter Aircraft Co., whose first test pilot he was. Here he did some very good work in all weathers—the more adverse the conditions the more cheerful he becomes. That firm parted with him regretfully when Imperial Airways called early in the spring. His flying time is over five thousand hours, and he has carried something like thirty-one thousand passengers.

Talking of speed on the London-Paris route, reminds one of the early days during the Peace Conference in 1919, when three Martinsyde F.4's took 75 min. for the trip, a record which has never been beaten. Can those who run our air mail services learn nothing from that piece of ancient history? Surely the carrying of mails and passengers are two such different things that attempts to run the two in one give satisfactory service to neither. America apparently appreciated the difference when she opened her transcontinental New York-San Francisco run.

Thursday's weather had its good points for those travelling south. Mr. C. B. Wilson did the 180 miles from Manchester to Croydon in 80 min., during the first hour of which he was

travelling at 135 m.p.h. So strong was the wind at Barton that he tells of standing still on the ground with his "Hermes" engine doing 1,300 revs. per minute. The meek civilian pilots of Croydon should have been spared during the sanguinary battles between Redland and Blueland last week. But the bloodthirsty fighters of a neighbouring R.A.F. aerodrome had to show them what war meant. They were kept in leash as one "Argosy" after another stumbled its inoffensive way over them. But when it came to a foreign night mail in the small hours of Thursday morning, they could be held no longer. It is rumoured that the pilot, a one-time ally, was riddled with camera gun shots and is now a convinced pacifist.

Mr. Levine became well known here some four years ago when he stole his own machine from Le Bourget and flew it to Croydon with half the French military air service on his heels, trying to baulk his nefarious plan. Last week he turned up again as an Imperial Airways passenger from Berck. After being shown over the Desoutter and A.D.C. factories, he departed for Birmingham on a "Hermes-Avian" chartered from Henley's.

You will be surprised to know how much your daily lunch at the Savoy depends on Imperial Airways. Apparently, they ring up the chef each morning to tell him what delicacies are on their way from Paris so that he may prepare his menu accordingly. In exchange for mushrooms coming in this direction, they have been carrying away birdish dead stock from Scotland and Yorkshire ever since the 12th.

This week's surprise item was two beavers consigned from Paris to Southampton via Croydon. It is conjectured that they are part of the annual migration of returning rubber necks which is sweeping over us at present, homeward bound for America.

The Dutch East Indies Service from Amsterdam to Java is to be re-opened at the beginning of October with van Dyk as pilot of the first outward bound machine. Fokker F-9's are to be used, but they will have more accommodation than is provided on PH-AGA which K.L.M. is operating between Amsterdam and Croydon at present.

1,308 passengers and 75 tons of freight have gone through Croydon during the past week.

"M. L."

GLIDING

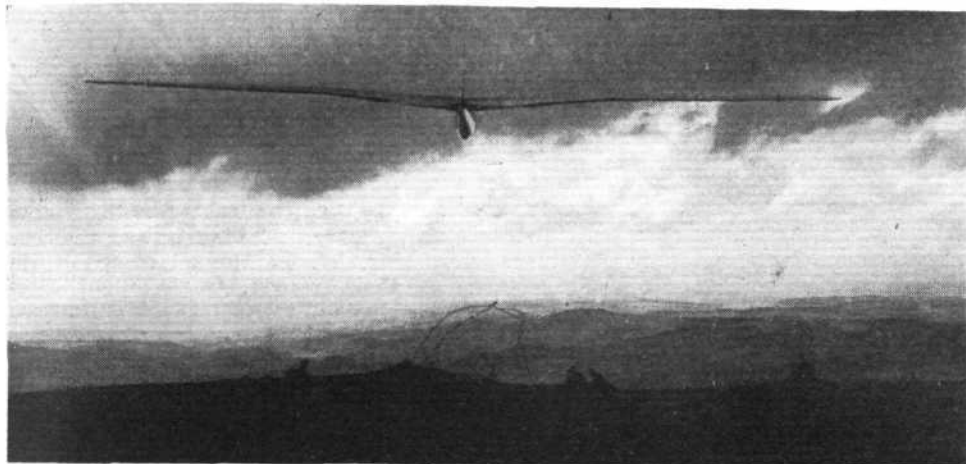
THE Dickson Glider.—We are informed that the designer of this glider has carried out extensive flight trials, and the machine behaved beautifully in every way, proving exceptionally stable. The only slight adjustment made was to fit the wires inside the rudder pedals instead of outside, to slightly reduce the gearing.

IT is reported that Lieut. Hemmer, of Munich, the pilot who recently established a gliding record at the Wasserkuppe, by remaining in the air for 9 hr. 35 min., has announced his intention to attempt a Channel crossing from England to France in a glider in September.

and the next meeting was fixed for July 2. During the evening new clubs were formed for the Paddington and Lutwyche districts.

THE Kilmarnock Gliding Club has secured an excellent gliding site at Cragie, some 3 miles from the town, through the kind co-operation of the owner, Mr. Nairn. The membership is now 30, including 5 pilots of power driven aircraft.

AT a recent meeting of the Bradford Gliding Club, the Secretary, Mr. S. Young, announced that the club had



The "Fafnir," an interesting new glider built by the Rhön-Rossitten Gesellschaft, in flight at the Wasserkuppe during the competitions now in progress. The bird-like wings and the extraordinarily high aspect ratio should be noted. Extreme care has been taken in fairing the fuselage, and the pilot sits in a modified form of cabin, a centre fairing going right over his head and merging into the centre of the wing.

GLIDING in Queensland, though in its infancy, is causing great enthusiasm. A general meeting was called recently and a rapid growth of the movement is predicted within the next few months. Mr. A. H. Knight was appointed chairman, and Mr. H. B. Davis, secretary. Mr. Davis announced that there were 17 known glider clubs in Queensland, 10 of them being in the metropolitan area, and three of them—Southport, Yeronga, and Milton—were making progress with the construction of their machines. It was certain that the others would waste no time in equipping themselves as soon as they were given plans and instructions on the method of building. It was decided that each club should be asked to nominate a delegate to a general council, which would be known as the Associated Glider Bodies of Queensland. Messrs. G. N. Wikner and R. S. Hall were appointed the first delegates,

found a site from which they intend to operate. This is at Dobrudden Flat, between Baildon and Shipley Glen; but before it could be used, permission would have to be obtained from the Bradford Corporation.

ILKLEY GLIDING CLUB made many flights in their new glider during last week-end. A soaring demonstration will be given by Herr Magersuppe from August 29 to 31. He will use a Professor type glider. On the dates of the gliding exhibitions the club are endeavouring to run a competition between members of various gliding clubs.

MEMBERS of the Driffild Gliding Club have tried out their new glider, and many successful flights were made during the last week.

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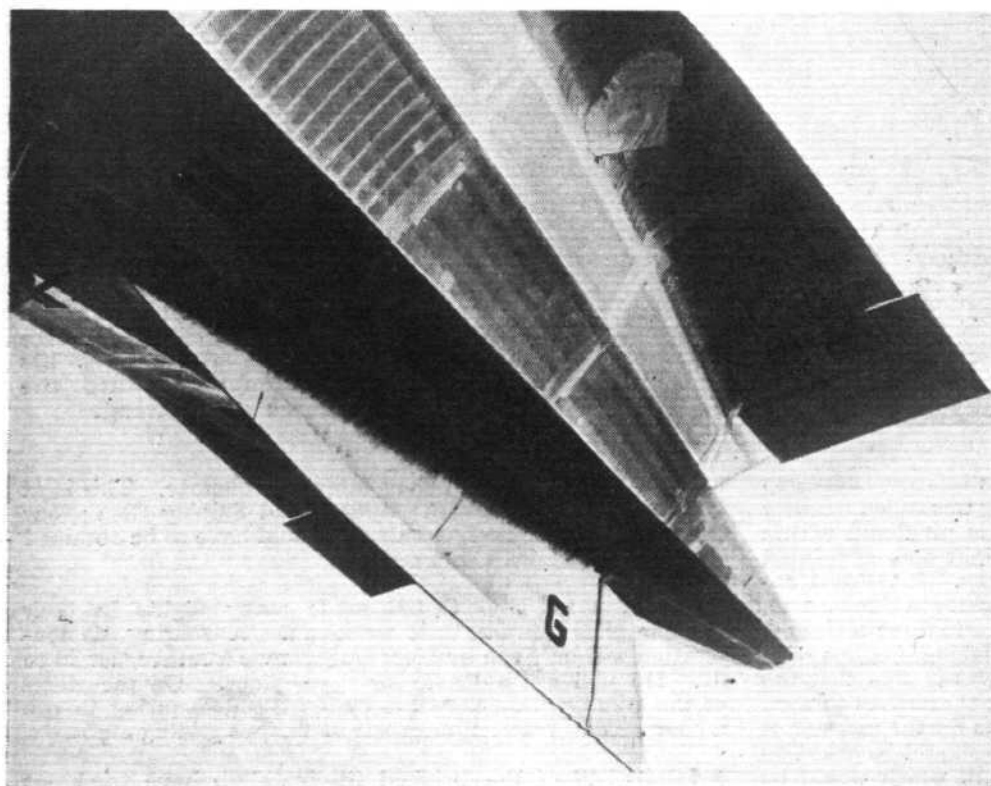


A Prüfling of the London Gliding Club in the air over Ivinghoe Beacon. (Flight Photo.)

AIRISMS FROM THE FOUR WINDS

Miss Amy Johnson's New 'Plane

IN the presence of a crowd estimated at about 100,000 people, Miss Amy Johnson was presented with a new machine at Hyde Park on August 16. The machine, a two-seater D.H. "Gipsy Moth," similar to the one (*Jason*) on which she made her Australian flight, was subscribed for by readers of the *Daily Sketch* and *Sunday Graphic*, and was appropriately named "Johnnie." The presentation was made by Sir Sefton Brancker, who also handed Miss Johnson a silver model of the machine, and Mr. W. Hill, representing Allied Newspapers, Ltd., presided over the ceremony, while Lt.-Com. Kenworthy, M.P. for Central Hull, was among those present on the platform.



A MID-AIR REPAIR: The temporary repair made to the damaged fin of R 100 during her flight to Canada.

Death of Mr. Van Lear Black

AVIATION, particularly commercial aviation, has lost a true friend and supporter in Mr. Van Lear Black, who, we regret to learn, fell overboard from his yacht and was drowned off the New Jersey coast on August 18. His name is well known to our readers, for during the past four years he has made numerous flights—almost entirely in connection with business—in his own and hired aeroplanes to many parts of the world. His first flights were mainly confined to Europe, but later he made several long-distance trips—Amsterdam to Batavia and back (which flight opened up the possibilities of the present air mail service on that route), London to Cape Town, London to China and Japan, whence his machine was shipped to San Francisco, and he flew from there to his home in Baltimore. Mr. Black—who was proprietor of the *Baltimore Sun* newspapers and was interested in many other undertakings—always employed two well-known Dutch pilots, G. Geysendorffer and J. Scholte, and Fokker monoplanes. It is estimated that altogether Mr. Black had flown approximately 200,000 miles (not including incidental short hops).

Another "Engine Reliability" Record

THE endurance record (with refuelling) of 553 hr. 41 min. recently established in America by the Hunter brothers has now been beaten by 96 hr. The new effort has been accomplished by two other American pilots, Dale Jackson and Forest O'Brine, who landed at 6.39 a.m., August 17, at St. Louis after having been up for 647½ hours (nearly 27 days) in their monoplane *Greater St. Louis*. They covered approximately 39,000 miles.

Atlantic-Pacific-Atlantic Records

ON August 7, Captain Frank Hawks, flying a Travel Air monoplane, flew from New York to San Francisco (2,500 miles) in 14 hr. 50 min. The same pilot, on August 13, made the return journey in 12 hr. 25 min., thus beating Col. Lindbergh's record for the coast-to-coast trip of 14 hr. 45 min. Capt. Hawks' flying time for the west-east flight was 11 hr. 40 min., or an average speed of 230 m.p.h. He made landings for refuelling at Albuquerque, Wichita, and Indianapolis.

Miss Winifred Brown at the Coliseum

MISS BROWN takes the stage this week at the Coliseum. After being introduced by Mr. Norman Long, she descends from the cockpit of her Avian (Cirrus III) and from the front tells the story of her flight in plain straightforward language. Her manner is naturally somewhat naive, but since she knows her subject thoroughly, she is well able to speak about it.

Mr. Matthews Returning Home

MR. J. MATTHEWS, the late Mr. W. L. Hooks' companion in their recent tragic flight from England to Australia, left Rangoon for England on August 18.

An Ambitious Atlantic Airliner

A 16-ENGINEED seaplane, to carry 100 passengers and provided with 62 state-rooms, is to be constructed by the Consolidated Aircraft Corporation of America for trans-atlantic service.

The R.A.F. and the Afridi Rising

THE Royal Air Force in India consists of eight squadrons (4 bomber squadrons using Wapitis, and 3 Army co-operation squadrons with Bristol Fighters), organised in three wings. There are bomber wings at Kohat and Risalpur, which together form No. 1 (Indian) Group, with H.Q. and 1 A.C. Squadron at Peshawar. There is an Army co-operation wing at Quetta in Baluchistan.

Recently the powerful Afridi tribe rose and attacked the city and district of Peshawar, which is the capital of the North-West Frontier Province. Only small

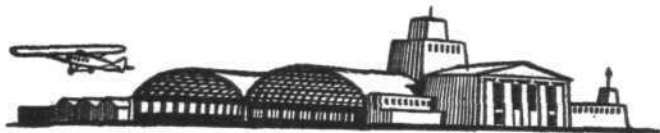
parties attempted to approach the city, and they did but little damage except to interfere with railway and telegraph communications for a few days. The W/T of the R.A.F. then kept up communications with the rest of India. The R.A.F. force on the Frontier was strengthened, presumably from the Quetta wing. The Afridi forces round Karachi made no attack in force and offered little in the way of targets; but caves which were known to shelter parties were consistently bombed. The villages of the Afridis were also photographed and bombed and this seemed to produce an effect on the *lashkars*. The Afridis made a great attempt to secure help from the Mohmands to the north and the Orakzai to the south. The Mohmands so far have declined to come out. The Orakzai despatched a *lashkar* to attack Kohat, which is reported to have been dispersed by the R.A.F. Meanwhile British women and children were removed in R.A.F. aeroplanes from the little fort of Parachniar in the Kurram valley. The Frontier trouble now appears to be subsiding.

Amelia Earhart Flight Commemorated

A COMMEMORATION Column was unveiled at Bury Port, Carmarthenshire, on August 8, to Miss Amelia Earhart, who, in June, 1928, flew from Newfoundland to Bury Port in a seaplane piloted by the late William Stultz. The ceremony was performed by Sir Arthur Whitten Brown.

The Meopham Disaster

THE inquest on the victims of the Meopham disaster, when a Junkers machine crashed, killing six people, was concluded on August 13, when the jury found "That the victims met their death falling from an aeroplane, the cause of the accident being unknown."



AIR TRANSPORT

NIGHT FLYING AIR MAIL SERVICES

It is understood that the Belgian authorities, who have had a night air mail service operating for some months between Brussels and London, are well satisfied with the loads they have been getting and with the working of the service, which is consequently being continued. Similar night services have been established in Germany, and in the United States and more recently in Canada. There is no doubt that even if such night flying services are not immediately paying propositions, most valuable experience is being gained.

The Civil Aviation Section of the London Chamber of Commerce recently submitted suggestions to the Air Ministry on the subject of non-stop night air mail services to various Continental centres about 1,000 miles distant from London. They have been given to understand that the Air Council fully agree with the Section's view that it is most desirable for this country not to lag behind in the developments which are taking place in the direction of the establishment of night air mail services.

The Section have now put their views before the Postmaster-General. Attention has been directed to the valuable saving of time of from 1½ to 2 days to be effected in the

delivery of mails to such places as Budapest, Madrid, Rome, Stockholm or Warsaw, if non-stop night flying services could be introduced, which would also enable mail to be dropped at other important places *en route*.

These special fast services would necessitate the use of a light type of aeroplane, as the services contemplated would be purely postal and would not involve the carriage of passengers. It is understood that there would be no obstacle, except in respect of finance, to such services being undertaken by concerns other than Imperial Airways should the latter be unable to do so.

It is to be hoped that the Post Office will take steps to speed up the air mail to the Continent by means of services on the lines suggested by the Civil Aviation Section of the London Chamber. Whilst it is appreciated that some form of assistance for the operating company would have to be forthcoming at the outset, at the same time the speedier delivery of letters would result in good loads being obtained and in the services ultimately becoming remunerative.

Further, it is essential that the Postal Authorities in this country should take some action without delay in view of the activities of other countries in this direction.

CIVIL AVIATION IN PERSIA AND JUGOSLAVIA

Persia

In the Department of Overseas Trade Report concerning Persia, the paragraph dealing with civil aviation states:—The following summary shows the rapid development of civil aviation in Persia through the Junkers Company:—

January, 1927.—Monopoly of postal air service in Persia granted the Junkers Company for five years.

February, 1927.—Opening of the Tehran-Pahlavi weekly service.

March, 1927.—Opening of the Tehran-Hamadan-Kermanshah-Qasrshirin weekly service.

February, 1928.—Extension of the Tehran-Pahlavi line to Baku.

April, 1928.—Opening of the Tehran-Isfahan-Shiraz-Bushire weekly service.

April, 1929.—Extension of the Tehran-Kermanshah service to Baghdad.

May, 1929.—Opening of the Tehran-Meshed line (now a weekly service).

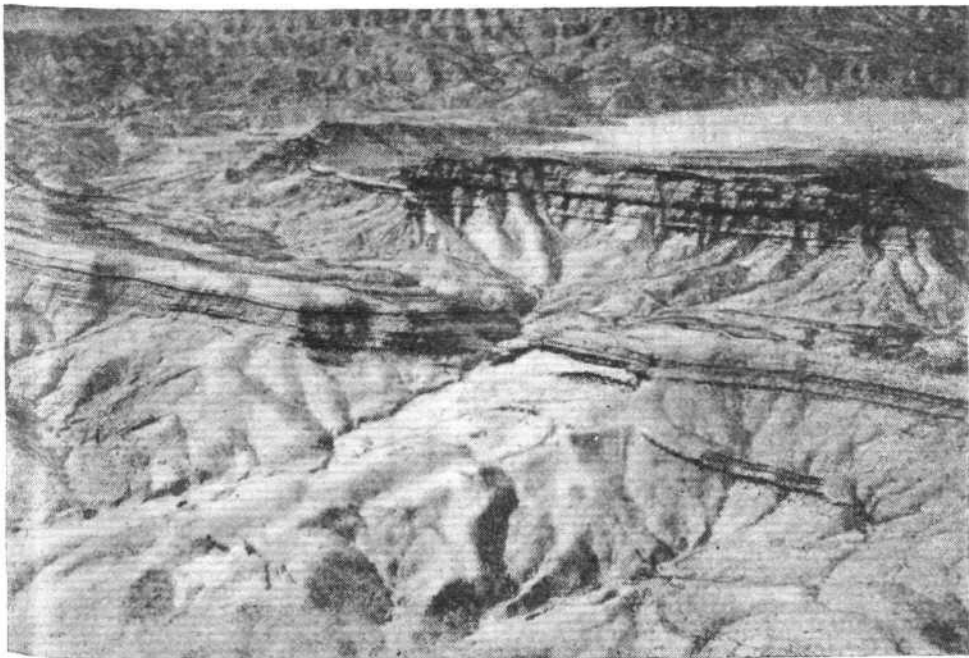
Junkers Air Service, Persia: Flight and Price Schedule

Between	Weekly Trips	Travel Time by Road	Travel Time by Air	Road Distance	Passenger Fare	1Kilo Merchandise or Baggage
		Days	Hrs.	Miles	U.S. \$	U.S. \$
Tehran-Baghdad	2	3-4	7½	600	75	0.75
" -Baku	1	2	8	—	65	0.65
" -Bushire	2	3-5	8	757	80	0.80
" -Hamadan	2	1	2½	235	30	0.30
" -Isfahan	2	1	2½	269	30	0.30
" -Kermanshah	2	1½	4½	353	40	0.40
" -Meshed	1	2-3	6	558	55	0.55
" -Pahlavi	1	1	2	230	30	0.30
" -Shiraz	2	2½-3	6	581	60	0.60
Baghdad-Hamadan	2	2-3	4½	365	55	0.55
" -Kermanshah	2	1½-2	2½	247	40	0.40
Baku-Pahlavi	1	1	3	—	35	0.35
Bushire-Isfahan	2	2-4	5	488	55	0.55
" -Shiraz	2	1-2	1½	176	28	0.28
Hamadan-Kermanshah	2	½-1	1½	118	15	0.15
Isfahan-Shiraz	2	1-2	3	312	35	0.35

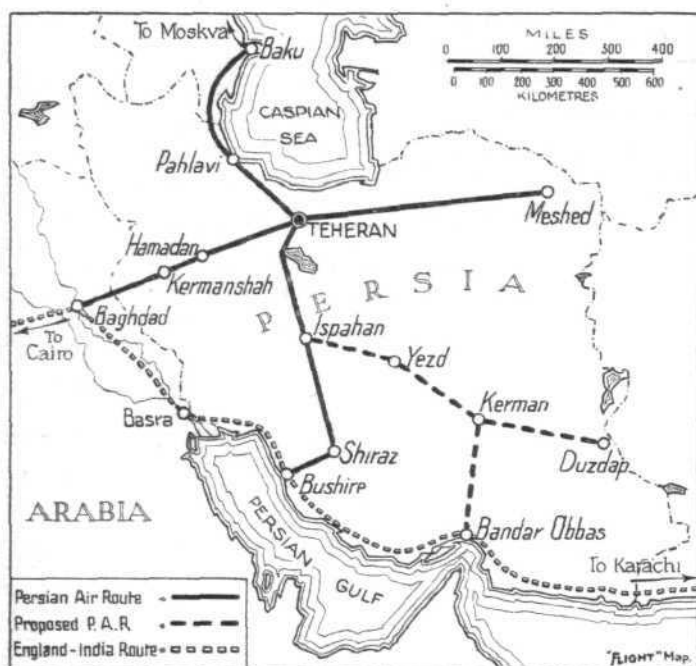
By October, 1929, the company's planes had flown a million kilometres in Persia and carried 10,000 passengers without serious mishap. It is interesting to note that whereas only 10 per cent. of the passengers carried in 1927 were Persians, as many as 75 per cent. were Persians in 1929.

It may be worth mentioning that the Junkers services connect with Imperial Airways at Baghdad and Bushire, so that it is possible to fly the whole way from London to Tehran via Cairo. In the summer the journey can also be made by air via Moscow.

A flight and price schedule is given above.



AIR SERVICES IN PERSIA: An interesting view of the Valley of Louristan taken from one of the airliners.



Sketch map of the airlines in Persia.



AIR SERVICES IN PERSIA: An aerial view of Teheran.

U.S. Air Mail

DURING the month of July 1,695,627 lb. of air mail was handled in the U.S.A.—an increase of 12,967 lb. over that for June.

Reduced Fares on Imperial Airways

CHEAPER fares on certain services of Imperial Airways between London and Paris came into operation on August 18. For the last service of the day in either direction (5 p.m.) the single fare will henceforth be reduced from £5 15s. to £4 4s. The fare for day trips, giving five hours in Paris, will be £7 19s. 6d., and at that price long-period return tickets, available for a month, will be issued for the services leaving Croydon at 8 a.m. The corresponding return fare for Le Touquet will be £6 13s.

Atlantic Air Services

In a memorandum prepared by the Air Ministry for the recent Colonial Office Conference, the following passage occurs:—

"When sufficient experience has been accumulated with experimental flights with the two British airships R 100 and R 101, it is intended to organise regular services between Cardington and Montreal and New York. The actual route to be followed will vary according to the time of the year and the prevailing weather conditions. The three main

Jugoslavia

IN the Department of Overseas Trade Report on the Economic Conditions in Jugoslavia, just issued, the following paragraph is given regarding aviation in that country:—Belgrade is connected by the regular services of the French "Cidna" with Paris via Budapest, Vienna, Prague, Nürnberg and Strasbourg, and also with Sofia, Bucharest and Constantinople.

There is a local air company, subsidised by the Government, which runs daily services between Belgrade and Zagreb and Belgrade and Skoplje, and this company also co-operates with the "Cidna" and the "Austroflug" in a Belgrade-Zagreb-Graz-Vienna service.

It is intended, under a new agreement between the local air company and the Government, to introduce the following further local services in the course of 1930:—Zagreb-Sušak, Belgrade-Sarajevo-Podgorica, and, if a Skoplje-Salonica service is commenced, Skoplje-Bitoli.

Progress is being made in the aircraft industry. Aeroplanes have been manufactured in the country for some years past and supplied with foreign engines, and it is now reported that the first aeroplane engine to be manufactured in the country has been completed by the Rakovica motor factory which holds the rights for the manufacture of "Jupiter" engines.

Negotiations are now proceeding with a Czechoslovak aviation company in connection with flights between Zagreb and Bratislava to be arranged in the interests of Czechoslovak tourists to the Adriatic. Belgrade and Skoplje are now ports of call for the Imperial Airways service to India.

routes which are likely to be followed are: (1) The northern route via Cape Farewell, the most southerly point of Greenland; (2) the direct route via Newfoundland; and (3) the southerly route via the Azores.

Plans have been formulated in America for the establishment of floating seadromes at intervals of approximately 300 nautical miles between New York and the Azores and the Azores and Plymouth. An experimental seadrome has been constructed and tried out in shallow water. Further experiments are to be conducted with anchorage in deep water. The seadrome will provide all the usual amenities of a land aerodrome, such as refuelling and repair facilities, so that the establishment of a regular route using land-planes will become a practical proposition.

Another route, known as the Sub-Arctic air route, is under investigation. This route will pass via the Faröes, Iceland, and the inland plateau of Greenland, and so connect up with Winnipeg and possibly Vancouver via the Hudson Strait. An expedition under the command of Mr. H. G. Watkins is at present in Greenland conducting, *inter alia*, an examination of possible bases for this air route. The expedition is being assisted by the British and the Canadian Governments. While this latter route deviates to the north of the great circle route between this country and Winnipeg, it has the advantage of better weather conditions."

CORRESPONDENCE

[The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for insertion in these columns.]

FRIGHTFULNESS OR CIVILISED WAR?

[2328] Your leading article of the 15th together with your review of Mr. Spaight's book makes one wonder if our leaders are putting purely military matters before food supplies, in the same way that they are putting unemployment before the collapse of our export trade.

War pushed to the limit must destroy civilisation, and the advent of the Air arm only makes that conclusion slightly more inevitable. The extreme Prussians never advocated "frightfulness" as an end in itself only because they knew that it was waste of time, as you suggest, but they made the mistake, that probably cost them the War, of wasting energy in the air which would have been more effectively employed in cutting the lines of communication with our food bases.

War to be effective must be "à l'outrance"; it is no use playing at it, and the only hope of a purely military decision in these days lies in the immediate destruction of the enemies' fighting machine after the declaration of war. That such a thing is possible I do not for a moment believe, and the last war proved that you cannot destroy the man power of the exterior armies faster than you can replace them. Therefore, the war of the future must be a war of attrition or starvation, as was the last one; and, when it comes to starvation, who will pay any heed to the "rules of war"?

The beautiful Hague Conventions were in existence before 1914: how many of them escaped violations when one side or the other found it expedient to forget them? How horrified we were when Fritz started Flammenwerfer, bombing civilian populations, etc.; all against the Hague rules, but that did not prevent the Allies retaliating. And so as regards tactics: if you fail in an immediate military decision, as I think you must, you are forced to siege tactics; and it seems to me that, if that be so, our forces are wasting time and opportunity. If the Germans had started out in 1914 to ruthlessly destroy our merchant marine they would probably have won the war hands down inside two years, because they would have starved us out; as it was, they did not realise until too late (fortunately for us) that they must do so before we Allies could effectively deploy our superior man power if they were to win; and then, of course, they started their intensive submarine campaign, a quick military decision being then out of their power.

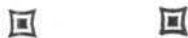
We in this country ought to be prepared for a siege, and we ought to be ready to attack any possible enemy's food supplies before we begin to think about purely military tactics. I wonder if the Admiralty and the Air Force have allowed another manœuvre season to go by without very searching tests of their ability to effectively control our food supplies: or, for instance, what instruction have our airmen received in the art of destroying standing corn? What liaison is there between the Ministry of Agriculture and the Navy? Do the Admiralty know to a ton how much food we must consume per day to keep our fighters and our workers up to concert pitch? These and a host of similar questions occur to me when I see our Services "playing at soldiers."

To sum up:—Every offensive weapon breeds a defensive one. Man power cannot be destroyed faster than it can be replaced except by disease or the destruction of the women. A quick military decision is a practical impossibility in these days.

A nation still fights on its stomach. And, finally, if our responsible Ministers rely upon a man or a nation who is really "up against it" observing any rules or agreements that he has entered into in the wonderful atmosphere of a Geneva, or a Hague, or a Locarno or anywhere else, they ought to be sacked.

ALAN R. SNOWDON.

Park Lane, W.1.
August 16, 1930.



Air Marshal Sir J. Higgins joins Armstrong Siddeley Development Co.

We are informed that Air Marshal Sir J. F. A. Higgins has joined the board of Armstrong Siddeley Development Co., and will assume the position of chairman of Sir W. G. Armstrong Whitworth Aircraft, Ltd., and A. V. Roe and Co. He will also join the board of Armstrong Siddeley Motors, Ltd. Mr. J. D. Siddeley retains the position of chairman of

CIVIL AVIATION IN IRELAND

[2329] I was greatly interested in Colonel C. Russell's statement to you on the poor state of civil aviation in Ireland. I am inclined to disagree with him in some of his remarks, which infer if my interpretation is correct, that the Free State Government and folk generally, are not at present sufficiently air-minded to take interest in flying. Some years ago I visited Baldonnell—in 1923 to be correct. The then O./C. at Baldonnell, was a Colonel McSwiney. He at that time complained of much the same thing. No help. Of course there was, in my opinion, some justification at that time; but it seems queer in my opinion that no one has yet had the ability to switch the Free State Government over in favour of civil aviation. We must remember that this same government took a favourable view of another project, and they were influenced to spend somewhere about £5,000,000 on a hydro-electric scheme. As regards the Irish Aero Club, in my opinion, this club does not show sufficient life. It bobs up now and again, but I believe it could gain more in both membership and prestige if those in charge would adopt a little more publicity. There are many in Ireland who would patronise this form of sport, if I may call it such, if they had the assurance that the club is open to all who care to become members. There has been in my opinion a general atmosphere of exclusiveness in and around Baldonnell up till I left Dublin early this year, and the sooner that style of doing things is done away with the better.

Now as regards an air service between Ireland and Croydon. I believe a service could be successfully operated at present, say Belfast, Dublin and London; Queenstown, Dublin and London; but we want a few good hard-headed business men to start now, and prove to both Governments that this means of travel is of benefit to both States, and I am very sure a help will be given to the company who has left that fear behind and started the service at once.

Also as regards his remarks about Belfast having a club merely on paper, he in my opinion should have enlarged on his statement and give the reason for this city having no air port. Perhaps I should inform him that a few years ago Belfast was one of the first cities to see that aviation was coming to stay, but they were either ignorantly drawn into it or influenced to buy ground at Malone, which cost the city a very big figure, and the place was practically useless: a swamp. The citizens of Belfast watched this squandering of public money, so much so, that a few months ago they were asked to vote on a plebiscite, on various matters, and included in the items on the paper, was whether the citizens were in favour of the Corporation voting a sum each year for the rent of the projected aerodrome on the Belfast Harbour estate; a very suitable site, too, I may say, but it was defeated by the vote of the people by 2 to 1. This I may add, was to be controlled by the Flying Services, and it was a pity this vote in favour of the money for the Harbour Aerodrome was lost, but it shows that, had we had level-headed business men in the Belfast Corporation at the time the flying ground was mooted in the first instance and men free from patronage, Belfast would have had one of the finest airports in Great Britain; but the public won't be fooled all the time. I merely make this reply to Colonel C. Russell, because I have been watching events in matters of aviation in both North Ireland and the Free State. I might add that as long ago as October, 1929, I made an endeavour in my little way to see if a little society to which I belong, could raise a sufficient number to form a gliding club in Belfast. I failed then, but I haven't lost heart yet. Oh no!

Thanking you for your article on the state of aviation in Ireland, and I hope you will continue to give us a good deal more news on Irish "affairs" in your very popular weekly.

GROUND ENGINEER.

Kennington, S.E.11.
August 5, 1930.



Armstrong Siddeley Development Co., Ltd., and Armstrong Siddeley Motors, Ltd.

Lodge Plugs and R.100

It may be of interest to record that Lodge sparking plugs were fitted to the Rolls-Royce "Condor" engines of the airship R.100 when she made her flight to Canada and back.

THE ROYAL AIR FORCE

London Gazette, August 15, 1930

General Duties Branch

Pilot Officer on probation W. F. Pharazyn, R.A.F.O. (S.R.), is granted a short service commn. as Pilot Officer on probation, with effect from and with seniority of July 28. Lt. T. H. Villiers, R.N., is re-attached to R.A.F. as Flying Officer, with effect from Aug. 1, and with seniority of Jan. 12, 1925. Flying Officer J. D. Rutherford is placed on half-pay list, Scale B, Feb. 22 to 26 inclusive. Flying Officer G. H. W. Selby-Lowndes is transferred to Reserve, Class A (July 14). Flying Officer K. C. Garvie relinquishes his short service commn. on completion of service (July 19). Pilot Officer on probation G. M. Easton relinquishes his short service commn. on account of ill-health (Aug. 12). The short service commns. of the undermentioned Pilot Officers on probation are terminated on cessation of duty (Aug. 11):—D. L. McAllister, P. E. L. A. Myers. Flight Lt. C. H. Schofield (Lt. Welsh Regt.) relinquishes his temp. commn. on return to Army duty (July 26). (Substituted for *Gazette* July 29.) *Gazette* July 29 concerning Flying Officer G. V. T. Thomson is cancelled.

Stores Branch

The undermentioned Flying Officers are transferred to Reserve, Class B (Aug. 10):—Leonard Francis Caunter, Cyrus Percival Marshall, Edward John Fishenden.

Medical Branch

John Frederick Stewart Wiseman, M.B., Ch.B., is granted a short-service commn. as Flying Officer for three years on Active List, with effect from and with seniority of July 23. Sqdn.-Ldr. Thomas Keen Place, L.D.S. (Major, Army Dental Corps), relinquishes his temp. commn. on ceasing to be employed with R.A.F. (Aug. 7).

GOOD REPAIR SERVICE

Heston it will be remembered was one of the controls in the recent International Touring Competition. Airwork, Ltd., who also had a service depot at Bristol, naturally undertook such minor repairs as came their way during the competition and great satisfaction was expressed with the way the work was done. At Heston work was carried out on one Polish and three German machines as follows:—

Polish machine R.W.D.4. SP.ADK.—Work included removal of the wing, repair of port wing tip and splicing in new piece on port top longeron.

German machine B.F.W. D.1887.—Tail plane box spar rebuilt.

German machine B.F.W. D.1891.—Strengthening panel made and fitted for underside of skid bay to strengthen tail portion of machine.

At Bristol work was carried out on one German and two Polish machines.

German machine B.F.W. D.1891.—Repairs to rear portion of fuselage and tail skid supports occupied the whole night and were finished at 6 a.m. The machine left Bristol at 7 a.m.

Polish machine R.W.D.2. P.5.—Thrust bearing dismantled and engine examined. The work was finished within two hours of the new thrust bearing being received from London.

Altogether 106½ man-hours were worked on competing machines and in three cases men worked till after midnight in order that competitors should suffer as little delay as possible.

Pobjoy Production

We are glad to learn that Pobjoy Airmotors, Ltd., has been formed and is being registered at Somerset House, for the production in considerable quantities of an entirely new light Pobjoy engine of remarkable characteristics, which will be placed on the market at an extremely attractive price. The directors of this concern are D. R. Pobjoy, I. C. Maxwell, C. M. Edye, A. Comper, and T. Barton.

Hangars for Africa

THE Crown Agents for the Colonies have placed contracts with the Tees Side Bridge and Engineering Works, Ltd., of Middlesbrough, for the supply of structural work for two steel-framed buildings to be used as aeroplane hangars for the Cape to Cairo Air Service. One is to be at Kisumu (Kenya), Lake Victoria, and will be used for land and sea-planes; it will measure 243 ft. by 116 ft. by 30 ft. The other, measuring 123 ft. by 90 ft. by 30 ft., will be at Broken Hill, Northern Rhodesia. Metal roofing for these hangars is being manufactured by the Wolverhampton Corrugated Iron Co.

Major Stewart

IN our paragraph last week concerning Major Stewart's resignation from Cirrus Aero Engines, Ltd., we stated in error that he was managing director. As a matter of fact, he was one of the *Joint General Managers*—and we apologise for our slip.

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

Pilot Officer William Herbert Bigg is promoted to rank of Flying Officer (July 22). The undermentioned Pilot Officers on probation are confirmed in rank:—Class AA (ii).—Gilbert Bernard Rahr (July 29); Trevor Gwyn Emmerson Price (Aug. 1); Giles Philip Eliot Howard (Aug. 7); Howson Charles Devitt (Aug. 8). *Special Reserve.*—The Hon. Francis Alexander Innys Eveleigh-de-Moleyns (Jan. 21); Joseph Blake Rowley Brooke (April 6). Pilot Officer William Thomson Taylor is transferred from Class AA (ii) to Class C (July 25); Pilot Officer on probation William Forster Pharazyn relinquishes his commn. in Special Reserve on appointment to a short-service commn. in R.A.F. (July 28). The undermentioned Flying Officers relinquish their commns. on completion of service:—William Francis Warner (June 20), William Nugent Sherlock (July 21).

Flying Officer Reginald Sheridan Carroll, A.F.C., relinquishes his commn. on completion of service, and is granted permission to retain rank of Flight Lt. (June 27). Flying Officer George Charles Lugg relinquishes his commn. on account of ill-health (Aug. 13).

Medical Branch

Flight Lt. James Prendergast, M.B., B.A., relinquishes his commn. on completion of service (May 15).

AUXILIARY AIR FORCE

General Duties Branch

No. 600 (CITY OF LONDON) (BOMBER) SQUADRON.—The undermentioned to be Pilot Officer:—G. H. Compton (July 26). The undermentioned Pilot Officers to be Flying Officers:—G. C. Bonner (Dec. 1, 1929); J. C. Larking (April 12). Flying Officer E. A. Burton relinquishes his commn. on account of ill-health (Aug. 13).

IMPORTS AND EXPORTS

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910).

For 1910 and 1911 figures see FLIGHT for January 25, 1912.

For 1912 and 1913, see FLIGHT for January 17, 1914.

For 1914, see FLIGHT for January 15, 1915, and so on yearly, the figures for 1927 being given in FLIGHT, January 17, 1930.

	Imports.		Exports.		Re-exports.	
	1929.	1930.	1929.	1930.	1929.	1930.
Jan.	£ —	£ 2	£ 74,307	£ 147,935	£ 100	£ —
Feb.	£ 6,532	£ 2,460	£ 195,369	£ 226,049	£ 2	£ 1,000
Mar.	£ 1,210	£ 744	£ 204,664	£ 156,098	£ 90	£ 802
April	£ 5,816	£ 2,959	£ 186,477	£ 213,390	£ 115	£ 79
May	£ 4,706	£ 11,706	£ 243,549	£ 158,460	£ 1,245	£ 2,550
June	£ 9,304	£ 15,029	£ 144,817	£ 252,443	£ 750	£ 1,060
July	£ 6,961	£ 14,216	£ 139,695	£ 170,594	£ —	£ 938

37,381 50,101 1,188,878 1,324,969 2,302 6,429

£ £ £ £

PUBLICATIONS RECEIVED

Simplified Aero-Dynamics. By Alexander Klemin. Chicago, Ill., U.S.A.: The Goodheart-Willcox Co., Inc.

Droit Aerien. April, May, June, 1930. Per Orbem 4, Rue Tronchet, Paris.

£ £ £ £

AERONAUTICAL PATENT SPECIFICATIONS

(Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motors. The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1929

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